186

THE PHYSICAL REVIEW

VOLUME 186 *Second Series* INDEX

OCTOBER 1969

Published for

THE AMERICAN PHYSICAL SOCIETY

by the

AMERICAN INSTITUTE OF PHYSICS

LANCASTER, PA., AND NEW YORK, N.Y.

Information for Contributors

Send manuscripts to the Editors, *Physical Review*, Brookhaven National Laboratory, Upton, N. Y. 11973.

For general format and style consult recent issues of this journal and the current revised edition of the American Institute of Physics *Style Manual* (which may be obtained for $1.00 from: American Institute of Physics, 335 East 45th Street, New York, N. Y. 10017). Specify section and index categories (see Phys. Rev. Index).

The **Manuscript**, including the abstract, references, and captions should be neatly typed in English, double spaced on good letter-size ($8\frac{1}{2}\times11$ inch, 21×28 centimeter) white paper with ample margins to allow for editorial marking. It should be carefully proofread by the author for misspellings, grammatical errors, and missing symbols. Unclear or excessive handwritten insertions are not acceptable. A **duplicate** copy of the manuscript must be furnished.

The **title** should be concise but informative enough to facilitate information retrieval. The **abstract** should be self-contained for reprinting in Abstract Journals. It should be adequate as an index (giving all subjects, major and minor, about which new information is given) and as a summary (giving the conclusions and all results of general interest in the article). It should be about 5% of the length of the article but less than 500 words.

Equations should be neatly typed or written in ink, punctuated and aligned to bring out their structure, and numbered on the right. Mathematical operation signs indicating continuity of the expression should be placed at the left of the second and succeeding lines.

Notation should be chosen so as to be clear, compact, and consistent with standard usage. The prime requisite is that the copy be as clear as possible to the typesetter, who is neither a physicist nor a mathematician. To this end a certain amount of editorial copymarking is necessary. All unusual symbols should be identified the first time they are used, and at subsequent times when confusion might arise. Boldface symbols should be marked by a wiggly black underline always. Handwritten symbols should be identified as capital or lower case. Handwritten Greek symbols should be identified in the margin the first time and underscored in red later if confusion is possible. (This is particularly important for those symbols such as χ or κ which may look, when handwritten, like italic symbols, x or k; or for capital Σ and Π which can be confused with the summation or product symbols, themselves oversize special characters.) German, script, or sans-serif letters should be identified the first time in the margin and later underscored in green if they may be confused with other letters. Unusual symbols, even if available should not be used unless absolutely necessary.

The solidus should be used instead of built-up fractions to save vertical space where clarity would not be jeopardized. This is of particular importance in the running text. Also the "exp" notation should be used where complicated exponents exist.

Monotype Composition: (a) Superscripts *cannot* be set above subscripts; in general all superscripts will follow all subscripts. The author must call special attention to necessary exceptions. (b) Overbars and roofs of square-root signs cannot be set above groups of symbols (a subscript is a separate symbol). Use notations such as $\langle\ \rangle_{av}$ and $(\ )^{1/2}$. (c) The symbols a, $\bar{a}$, $\vec{a}$, $\mathbf{a}$, $\hat{\mathbf{s}}$ are each separate symbols, which may or may not be available: consult the *Style Manual*.

Typewriter Composition: (a) In general superscripts will be set *above* subscripts to save horizontal space. The authors must call special attention to necessary exceptions. (b) Overbars *can* be set over an indexed symbol (e.g., over A or A^2 or A_b^2), but, for stylistic reasons, are not permitted over more than one mainline symbol at a time (e.g. not over AB or A+B). The square-root sign has no roof: do not use it unless what follows is unambiguous. (c) Diacritical marks such as tildes, carets, etc., *can* be put on any single symbol, including any index. (d) Bold-face symbols are *not* available. Vectors are printed roman with an arrow on top [mark copy with the arrow or with the usual pencilled wiggly underline). For second-rank tensors, and diadics, a double-headed arrow on top is available, if necessary.

References *including comments* must be numbered consecutively in order of first appearance in the text and should be given in a separate double-spaced list at the end of the text material. References to tables should be designated by lower case roman letters and given at the end of the table. The proper form for references will be found in the AIP *Style Manual* and in recent issues of this journal.

Numbered **tables** should be used for all but the simplest tabular material; they should have suitable captions which make the tables intelligible without reference to the text. The table structure should be clear, with simple column headings giving all units. The tables should be numbered in the order in which they are referred to in the text.

Figures should be planned for the 3-in. column width of the *Physical Review*. In some cases where the figures contain a great deal of detail, $1\frac{1}{2}$ or 2 columns may be used. The lettering and data points on the figures should be large and clear enough so that they will be legible after reduction (the final size should be no less than 2 millimeters). Waste space at the top and bottom should be avoided. Figures should be numbered in the order in which they are referred to in the text. A separate list of captions should be supplied. The figure itself should have properly labeled axes with correctly abbreviated units. [For unit abbreviations see AIP *Style Manual*.] Figures should be identified on the back by the number, the name of the first author, and the journal.

A maximum black-white contrast is necessary. We require original india-ink drawings or good, clear glossy prints. The latter are preferable to oversized originals. Avoid small open symbols which tend to fill in upon reduction, small dots which barely reproduce, and toned shading which fails to reproduce well. Photographs of apparatus are unacceptable and should be replaced by good schematic diagrams. For complete instructions on preparation of illustrations see AIP *Style Manual*.

After notification of acceptance, all correspondence regarding proofs, etc. should be addressed to: Supervisor, Editorial Department, American Institute of Physics, 335 East 45th Street, New York, N. Y. 10017. Reference *must* be made to journal, scheduled issue, title, and first author. Authors will be charged for alterations made in proof and, in the case of excessive alterations, the manuscript will be returned to the Editorial Office for reconsideration.

12-17-69

THE PHYSICAL REVIEW

A journal of experimental and theoretical physics established by E. L. Nichols in 1893

VOLUME 186

Second Series

OCTOBER 1969

Published for

THE AMERICAN PHYSICAL SOCIETY

by the

AMERICAN INSTITUTE OF PHYSICS

THE PHYSICAL REVIEW

A journal of experimental and theoretical physics established by E. L. Nichols in 1893.

Published by the
American Institute of Physics
for

The American Physical Society

Officers

President

L. W. ALVAREZ
University of California
Berkeley

Vice-President

E. M. PURCELL
Harvard University

Vice-President Elect

ROBERT SERBER
Columbia University

Treasurer

S. L. QUIMBY
Columbia University

Deputy Treasurer

J. A. BURTON
Bell Telephone Laboratories

Executive Secretary

W. W. HAVENS, JR.
Columbia University

Secretary Emeritus

K. K. DARROW
Bell Telephone Laboratories
(*retired*)

Regional Secretaries:

Central States

MURRAY PESKIN
Argonne National Laboratory

Western States

WARD WHALING
California Institute of Technology

Southwest and Mountain States

JAMES PHILLIPS
Los Alamos Scientific Laboratory

Southeastern States

L. W. SEAGONDOLLAR
North Carolina State University

Editor in Chief

S. A. GOUDSMIT
Brookhaven National Laboratory

Office of the Society

American Institute of Physics
335 East 45 Street
New York, N. Y. 10017

Editors

S. PASTERNACK J. R. ROESSER P. D. ADAMS

Assistant Editor

J. C. FINEMAN

Assistants to the Editors

P. IRVING R. W. JONES D. M. REHFIELD M. FASTMAN

Manuscripts for publication should be submitted to the Editors, *The Physical Review*, Brookhaven National Laboratory, Upton, N. Y. 11973. The authors' institutions are requested to pay a publication charge of $75 per page which, if honored, entitles them to 100 free reprints. An additional $10 will be requested for publication of the abstract in *Physics Abstracts*.

Proof and all correspondence concerning papers in the process of publication should be addressed as follows: Supervisor, Editorial Department, American Institute of Physics, 335 East 45 Street, New York, N. Y. 10017.

Reference must be made to title, author, journal, and scheduled date of publication.

Annual Subscription Prices

	U.S.A., Canada, and Mexico	Elsewhere
Members of the American Physical Society:		
Sec. 1 or 2 or 3 or 4 or 5	$ 15.00	$ 18.00
All numbers	50.00	65.00
(Only one copy of each index issue will be sent to each subscriber, regardless of the number of sections ordered.)		
Nonmembers:		
All numbers	100.00	115.00
Sec. 1 or 2 or 3 or 4 or 5	30.00	33.00
(*Nonmembers may subscribe to individual sections only as a supplement to a full subscription.*)		

Back Numbers

Yearly back-number rate when complete year is available:	
1953 through 1963, inclusive	$ 48.00
1964 through 1968, inclusive	65.00
1969	130.00
Single-copy back-number rate:	
1953 through 1968, inclusive	2.00
1969	3.00
Single copies of monthly index issues:	
1964 through 1968, inclusive	2.00
1969	3.00
Semiannual cumulative indexes:	
1964 through 1968, inclusive	2.00
1969	3.00

Subscriptions, renewals, orders for back numbers, and changes of address should be addressed to the Circulation Department, American Institute of Physics, 335 East 45 Street, New York, N. Y. 10017. For change of address, allow at least six weeks' advance notice; send both old and new addresses and, if possible, please include an address stencil imprint from the mailing envelope of a recent issue.

Permission is granted to quote from this journal in scientific articles, with the customary acknowledgment of the source. Reproduction of figures and tables is permitted provided that the author's consent is obtained and that the editorial office is notified. Reproduction of whole articles for commercial purposes requires written permission of both Editor and author.

The Physical Review is published five times a month (on the 5th, 10th, 15th, 20th, and 25th of each month), at Prince and Lemon Streets, Lancaster, Pa. 17604.

Author Index to Volume 186

In this index complete paper citations are given under the name of each participating author, eliminating "See" references. Papers are arranged in ascending order of page numbers.

Abraham, D. R.
Gamma Decay of Analog Resonances in the $^{48}Ti(p,\gamma)^{49}V$ Reaction—J. C. Legg, D. G. Megli, D. R. Abraham, L. D. Ellsworth, and S. Hechtl. **186**, 1138 (1969)

Acharya, R.
Superconvergent Dispersion Relations and Pion-Pion Scattering Sum Rules—R. Acharya, H. H. Aly, and P. Narayanaswamy. **186**, 1567 (1969)
Inconsistency of Asymptotic $SU(2)\times SU(2)$ for the Proper Amplitudes with Local Chiral Algebra—R. Acharya, H. H. Aly, and P. Narayanaswamy. **186**, 1731 (1969)

Adler, William F.
Point-Defect Interactions in Elastic Materials of Grade 2—William F. Adler. **186**, 666 (1969)

Afnan, I. R.
Cluster Expansion Method in Light Nuclei—I. R. Afnan. **186**, 984 (1969)

Agrawal, Bal Krishna
T Matrix for a Substitutional Impurity in Diatomic fcc and bcc Lattices—Bal Krishna Agrawal. **186**, 712 (1969)

Aksornkitti, S.
Time-of-Flight Studies of Propagating Electron Plasma Waves in Tonks-Dattner Resonances—S. Aksornkitti, H. C. S. Hsuan, and K. E. Lonngren. **186**, 160 (1969)

Alben, Richard
Magnetoelastic Spin Hamiltonians: Applications to Garnets—Richard Alben and Earl Callen. **186**, 522 (1969)

Alburger, D. E.
Beta Decay of B^{13}—K. W. Jones, W. R. Harris, M. T. McEllistrem, and D. E. Alburger. **186**, 978 (1969)

Alig, R. C.
Energy Levels of Ce^{2+} in CaF_2—R. C. Alig, Z. J. Kiss, J. P. Brown, and D. S. McClure. **186**, 276 (1969)

Alston, W. J., III
Elastic and Inelastic Electron Scattering from Mn^{55}—H. Theissen, R. J. Peterson, W. J. Alston, III, and J. R. Stewart. **186**, 1119 (1969)

Aly, H. H.
Superconvergent Dispersion Relations and Pion-Pion Scattering Sum Rules—R. Acharya, H. H. Aly, and P. Narayanaswamy. **186**, 1567 (1969)
Inconsistency of Asymptotic $SU(2)\times SU(2)$ for the Proper Amplitudes with Local Chiral Algebra—R. Acharya, H. H. Aly, and P. Narayanaswamy. **186**, 1731 (1969)

Anastassakis, E.
Stark Effect on Impurity Levels in Diamond—E. Anastassakis. **186**, 760 (1969)

Andersen, H. H.
Stopping Power of Zr, Gd, and Ta for 5–12-MeV Protons and Deuterons. Further Evidence of an Oscillatory Behavior of the Excitation Potential—H. H. Andersen, H. Simonsen, H. Sørensen, and P. Vajda. **186**, 372 (1969)

Andersen, J. U.
Measurements and Calculations of Critical Angles for Planar Channeling—S. T. Picraux and J. U. Andersen. **186**, 267 (1969)

Antippa, Adel F.
ρ-f^0 Double Bootstrap by the Balázs Method—Adel F. Antippa and Allen E. Everett. **186**, 1571 (1969)

Appelbaum, Joel A.
Theory of Many-Body Effects in Tunneling—Joel A. Appelbaum and W. F. Brinkman. **186**, 464 (1969)

Argyres, Ernestos N.
Complex Angular Momentum and Regge Asymptotic Behavior of the Virasoro Model—Ernestos N. Argyres and C. S. Lam. **186**, 1532 (1969)

Arlinghaus, F. J.
Energy Bands and Fermi Surface of Ordered β Brass—F. J. Arlinghaus. **186**, 609 (1969)

Arndt, R. A.
Hall Mobility of Holes in Anthracene—A. I. Korn, R. A. Arndt, and A. C. Damask. **186**, 938 (1969)

Arnold, Richard C.
Scattering and Production of Excited Hadrons—Richard C. Arnold and P. G. O. Freund. **186**, 1631 (1969)

Aronson, Harmon
Spin-1 Electrodynamics with an Electric Quadrupole Moment—Harmon Aronson. **186**, 1434 (1969)

Arrott, A.
Neutron-Diffraction Measurement of the Lattice Parameter of Potassium Metal at 5.2°K—S. A. Werner, E. Gürman, and A. Arrott. **186**, 705 (1969)

Ashley, K. L.
Space-Charge-Limited Current in Neutron-Irradiated Silicon, with Evidence of the Complete Lampert Triangle—H. Thurman Henderson and K. L. Ashley. **186**, 811 (1969)

Aslanides, E.
Positron Decays of ^{42}Ti and ^{38}Ca—A. Gallmann, E. Aslanides, F. Jundt, and E. Jacobs. **186**, 1160 (1969)

Atzmony, U.
Magnetic Dipole and Electric Quadrupole Moments of the First 2^+ State of Sm^{154}—R. M. Wheeler, U. Atzmony, and J. C. Walker. **186**, 1280 (1969)

Avery, D. A.
Experimental Investigation of Thermomagnetic Torque in Hydrogen—D. A. Avery. **186**, 108 (1969)

Aviv, R.
$\alpha=0$ Wrong-Signature Pole in πN Charge Exchange—R. Aviv and D. Horn. **186**, 1510 (1969)

Awasthi, O. N.
Origin of Ultrasonic Absorption in Heavy Water—S. K. Kor, Gulshan Rai, and O. N. Awasthi. **186**, 105 (1969)

Bailey, P. T.
Interpretation of Radiation at 1.485 eV in High-Purity Zn- and Se-Doped GaAs—P. T. Bailey. **186**, 957 (1969)

Bair, J. K.
Elastic and Inelastic Scattering of Protons from Krypton—H. J. Kim, J. K. Bair, C. M. Jones, and H. B. Willard. **186**, 1110 (1969)

Banner, D.
Measurement of the Ratio of the τ' Partial Decay Rates: $\Gamma(K^-\to\pi^-\pi^0\pi^0)/\Gamma(K^+\to\pi^+\pi^0\pi^0)$—D. Herzo, D. Banner, E. Beier, W. K. Bertram, R. T. Edwards, H. Frauenfelder, L. J. Koester, E. Rosenberg, A. Russell, S. Segler, and A. Wattenberg. **186**, 1403 (1969)

Bardasis, A.
Low-Frequency Response Function of a Superconductor at Finite Temperature—A. Bardasis. **186**, 402 (1969)

Barger, V.
Experimental Aspects of Dual Theories for Baryons—V. Barger and C. Michael. **186**, 1592 (1969)

Barker, A. S., Jr.
Surface-Plasmon Excitation by Tunneling Electrons in GaAs-Pb Tunnel Junctions—D. C. Tsui and A. S. Barker, Jr.. **186**, 590 (1969)

Barker, Bruce M.
Relativistic Two-Pion-Exchange Effects in Nucleon-Nucleon Scattering up to 350 MeV—Bruce M. Barker and Richard D. Haracz. **186**, 1624 (1969)

Barnett, A. R.
Coulomb Excitation and Reorientation of the Octupole State in ^{208}Pb—A. R. Barnett and W. R. Phillips. **186**, 1205 (1969)

Bassani, F.
Band Structure and Impurity States—F. Bassani, G. Iadonisi, and B. Preziosi. **186**, 735 (1969)

Copyright © 1970 by The American Physical Society

Bate, R. T.
Galvanomagnetic Studies of Sn-Doped Bi. II. Negative Fermi Energies—R. T. Bate, N. G. Einspruch, and P. J. May, Jr. **186**, 599 (1969)
Becker, W. M.
Effect of Hydrostatic Pressure on the Band Structure of GaSb—D. G. Seiler and W. M. Becker. **186**, 784 (1969)
Beier, E.
Measurement of the Ratio of the τ' Partial Decay Rates: $\Gamma(K^-\to\pi^-\pi^0\pi^0)/\Gamma(K^+\to\pi^+\pi^0\pi^0)$—D. Herzo, D. Banner, E. Beier, W. K. Bertram, R. T. Edwards, H. Frauenfelder, L. J. Koester, E. Rosenberg, A. Russell, S. Segler, and A. Wattenberg. **186**, 1403 (1969)
Bergersen, Birger
Positron Effective Mass in an Electron Gas—Birger Bergersen and Erkki Pajanne. **186**, 375 (1969)
Berlinger, W.
Observation of Two Charged States of a Nickel-Oxygen Vacancy Pair in $SrTiO_3$ by Paramagnetic Resonance—K. A. Müller, W. Berlinger, and R. S. Rubins. **186**, 361 (1969)
Berman, B. L.
Photoneutron Cross Sections for Sn^{116}, Sn^{117}, Sn^{118}, Sn^{119}, Sn^{120}, Sn^{124}, and Indium—S. C. Fultz, B. L. Berman, J. T. Caldwell, R. L. Bramblett, and M. A. Kelly. **186**, 1255 (1969)
Berry, R. S.
Addendum to "Pseudopotential Method for Inelastic Processes in Atoms and Molecules. II. Photoionization of N_2"—B. Schneider and R. S. Berry. **186**, 265 (1969)
Bertram, W. K.
Measurement of the Ratio of the τ' Partial Decay Rates: $\Gamma(K^-\to\pi^-\pi^0\pi^0)/\Gamma(K^+\to\pi^+\pi^0\pi^0)$—D. Herzo, D. Banner, E. Beier, W. K. Bertram, R. T. Edwards, H. Frauenfelder, L. J. Koester, E. Rosenberg, A. Russell, S. Segler, and A. Wattenberg. **186**, 1403 (1969)
Bezzerides, Bandel
Transition between the Quasistatic and Impact Limits in Spectral Line Broadening—Bandel Bezzerides. **186**, 239 (1969)
Bhowmik, B.
Deuteron Production in Interactions of 22.8-GeV/c Protons with Ag and Br Nuclei—R. K. Shivpuri and B. Bhowmik. **186**, 1200 (1969)
Bierig, R. R.
Effects of a Magnetic Field on Optical Mixing Due to Nonparabolicity in n-InSb—R. W. Bierig, Margaret H. Weiler, and Benjamin Lax. **186**, 747 (1969)
Bitar, Khalil M.
Construction of Crossing-Symmetric Amplitudes Satisfying Duality—Khalil M. Bitar. **186**, 1424 (1969)
Blackford, B. L.
Tunneling Investigation of Energy-Gap Anisotropy in Superconducting Bulk Pb—B. L. Blackford and R. H. March. **186**, 397 (1969)
Blankenbecler, R.
New Representation of the Scattering Amplitude—J. C. Botke and R. Blankenbecler. **186**, 1536 (1969)
Jost-Function Description for the Bethe-Salpeter Equation—Richard W. Haymaker and R. Blankenbecler. **186**, 1648 (1969)
Blunt, R. F.
Lattice Absorption in Strontium Titanate—M. I. Cohen, R. C. Casella, R. F. Blunt, and R. A. Forman. **186**, 834 (1969)
Böer, K. W.
Influence of Boundary Conditions on High-Field Domains in Gunn Diodes—K. W. Böer and G. Döhler. **186**, 793 (1969)
Bolef, D. I.
Ultrasonic Propagation in $RbMnF_3$. II. Magnetoelastic Properties—R. L. Melcher and D. I. Bolef. **186**, 491 (1969)
Bonar, D. C.
Measurement of Polarization Effects in the $H^2(d,p)H^3$ Reaction at 140 keV—R. I. Steinberg, C. W. Drake, and D. C. Bonar. **186**, 1059 (1969)
Boon, Jean Pierre
Brillouin Scattering in Simple Liquids: Argon and Neon—Paul A. Fleury and Jean Pierre Boon. **186**, 244 (1969)
Booth, B. L.
Spin Splitting of Landau Levels and the Effective g Factor in Gray Tin—B. L. Booth and A. W. Ewald. **186**, 770 (1969)
Borneas, M.
Principle of Action with Higher Derivatives—M. Borneas. **186**, 1299 (1969)
Botke, J. C.
New Representation of the Scattering Amplitude—J. C. Botke and R. Blankenbecler. **186**, 1536 (1969)
Boulware, David G.
Anomalous Commutators and the Box Diagram—David G. Boulware and R. Jackiw. **186**, 1442 (1969)
Boyer, Timothy H.
Classical Statistical Thermodynamics and Electromagnetic Zero-Point Radiation—Timothy H. Boyer. **186**, 1304 (1969)
Brady, T.
Unitary Pole Approximation and Binding Energy of the Trinucleon—T. Brady, M. Fuda, E. Harms, J. S. Levinger, and R. Stagat. **186**, 1069 (1969)
Brafman, O.
Pressure-Induced Phonon Frequency Shifts Measured by Raman Scattering—S. S. Mitra, O. Brafman, W. B. Daniels, and R. K. Crawford. **186**, 942 (1969)
Brailsford, A. D.
Electronic Component of Dislocation Drag in Metals—A. D. Brailsford. **186**, 959 (1969)
Bramblett, R. L.
Photoneutron Cross Sections for Sn^{116}, Sn^{117}, Sn^{118}, Sn^{119}, Sn^{120}, Sn^{124}, and Indium—S. C. Fultz, B. L. Berman, J. T. Caldwell, R. L. Bramblett, and M. A. Kelly. **186**, 1255 (1969)
Brinkman, W. F.
Theory of Many-Body Effects in Tunneling—Joel A. Appelbaum and W. F. Brinkman. **186**, 464 (1969)
Brown, J. P.
Energy Levels of Ce^{2+} in CaF_2—R. C. Alig, Z. J. Kiss, J. P. Brown, and D. S. McClure. **186**, 276 (1969)
Brown, R. W.
Regularization and Ward-Identity Anomalies—R. W. Brown, Chia-Chang Shih, and Bing-Lin Young. **186**, 1491 (1969)
Brust, D.
Electronic Structure and Optical Absorption in Noncrystalline Semiconductors—D. Brust. **186**, 768 (1969)
Bryant, Howard C.
Surface-Wave Description of π^+p Backward Scattering—Howard C. Bryant. **186**, 1488 (1969)
Buchanan, P. S.
(n,n') and $(n,2n)$ Reactions in Several Elements at 14.8 MeV—Suresh C. Mathur, P. S. Buchanan, and I. L. Morgan. **186**, 1038 (1969)
Burbank, R. D.
Structural Phase Transitions in $PrAlO_3$—E. Cohen, L. A. Risberg, W. A. Nordland, R. D. Burbank, R. C. Sherwood, and L. G. Van Uitert. **186**, 476 (1969)
Butler, S. T.
Wave Functions for Nuclear-Structure Calculations—S. T. Butler, R. G. L. Hewitt, B. H. J. McKellar, I. R. Nicholls, and J. S. Truelove. **186**, 963 (1969)
Cairns, I.
Lightly Ionizing Particles in Air-Shower Cores—I. Cairns, C. B. A. McCusker, L. S. Peak, and R. L. S. Woolcott. **186**, 1394 (1969)
Caldwell, J. T.
Photoneutron Cross Sections for Sn^{116}, Sn^{117}, Sn^{118}, Sn^{119}, Sn^{120}, Sn^{124}, and Indium—S. C. Fultz, B. L. Berman, J. T. Caldwell, R. L. Bramblett, and M. A. Kelly. **186**, 1255 (1969)
Callen, Earl
Magnetoelastic Spin Hamiltonians: Applications to Garnets—Richard Alben and Earl Callen. **186**, 522 (1969)

Capps, Richard H.
Partial Widths of Exchange-Degenerate Partners—Richard H. Capps. **186**, 1514 (1969)
Carrico, J. P.
Permanent Electric Dipole Moment of the Cesium Atom. An Upper Limit to the Electric Dipole Moment of the Electron—T. S. Stein, J. P. Carrico, E. Lipworth, and M. C. R eisskopf. **186**, 39 (1969)
Carter, H. K.
Hindrance Factors of Allowed $1^+ \rightarrow 0^+$ Decays in Light-Mass Even-Even Nuclei with $A = 66$–80—J. H. Hamilton and H. K. Carter. **186**, 1294 (1969)
Casella, R. C.
Lattice Absorption in Strontium Titanate—M. I. Cohen, R. C. Casella, R. F. Blunt, and R. A. Forman. **186**, 834 (1969)
Chang, Edward S.
Scattering of Electrons from H_2^+. II.—A. Temkin, K. V. Vasavada, Edward S. Chang, and A. Silver. **186**, 57 (1969)
Chang, F. H. S.
Magnetoacoustic Effects in Very Pure Cd—J. D. Gavenda and F. H. S. Chang. **186**, 630 (1969)
Chanmugam, G.
Effects of Three-Body Forces in a Neutron Star—G. Chanmugam. **186**, 1384 (1969)
Chau, Cheuk-Kin
Thermal Conductivity of Alkali Halide Crystals Containing the Hydroxide Ion—Ralph L. Rosenbaum, Cheuk-Kin Chau, and Miles V. Klein. **186**, 852 (1969)
Chaudhuri, S.
F-Center Distribution and Electron Channeling in NaCl—A. Choudhury, S. Chaudhuri, and K. Goswami. **186**, 885 (1969)
Chavda, L. K.
Modified Continuous-Moment Sum Rule and the Pomeranchon—L. K. Chavda. **186**, 1463 (1969)
Chen, Joseph C. Y.
Hydrogenic- and Sturmian-Function Expansions in Three-Body Atomic Problems—Joseph C. Y. Chen and Takeshi Ishihara. **186**, 25 (1969)
Chen, W. K.
Isotope Effect for Cation Self-Diffusion in CoO Crystals—W. K. Chen, N. L. Peterson, and W. T. Reeves. **186**, 887 (1969)
Chen, Y.
Luminescence of the F^+ Center in MgO—Y. Chen, J. L. Kolopus, and W. A. Sibley. **186**, 865 (1969)
Cheng, Hung
Impact Factor and Exponentiation in High-Energy Scattering Processes—Hung Cheng and Tai Tsun Wu. **186**, 1611 (1969)
Cheng, L. J.
Effect of Polarized Light on the 1.8-, 3.3-, and 3.9-μ Radiation-Induced Absorption Bands in Silicon—L. J. Cheng and P. Vajda. **186**, 816 (1969)
Cheung, Franklin F. K.
Phase of the Elastic Scattering Amplitude and the Rate of Decrease of the Total Cross Section at High but Finite Energy—Franklin F. K. Cheung. **186**, 1695 (1969)
Positivity Bounds on Partial-Wave Amplitudes from Crossed-Channel Unitarity—Franklin F. K. Cheung. **186**, 1726 (1969)
Cho, C. F.
Vector-Meson Dominance and High-Energy Electroproduction of the ρ Meson—C. F. Cho and G. J. Gounaris. **186**, 1619 (1969)
Vector-Meson-Dominance Predictions on Inelastic Electron-Proton Scattering—C. F. Cho, G. J. Gounaris, and J. J. Sakurai. **186**, 1734 (1969)
Choudhury, A.
F-Center Distribution and Electron Channeling in NaCl—A. Choudhury, S. Chaudhuri, and K. Goswami. **186**, 885 (1969)
Choudhury, M. H.
Pressure Shifts of High-Series Spectral Lines and Cross Sections for Scattering of Very Slow Electrons from Rare-Gas Atoms—M. H. Choudhury. **186**, 66 (1969)
Chow, Y.
Nuclear Zeeman Effect in W^{182} in Iron—R. B. Frankel, Y. Chow, L. Grodzins, and J. Wulff. **186**, 381 (1969)
Choyke, W. J.
Optical Absorption in *n*-Type Cubic SiC—Lyle Patrick and W. J. Choyke. **186**, 775 (1969)
Christy, R. W.
Dichroism of *V* Bands in Potassium and Rubidium Halides—E. M. Winter, D. R. Wolfe, and R. W. Christy. **186**, 949 (1969)
Clark, B. C.
Erratum: Theoretical Temperature Dependence of the Mean-Square Displacements and Velocities of Surface Atoms of Face-Centered Cubic Crystals [**180**, 716 (1969)]—R. F. Wallis, B. C. Clark, Robert Herman, and D. C. Gazis. **186**, 962 (1969)
Cohen, E.
Structural Phase Transitions in $PrAlO_3$—E. Cohen, L. A. Risberg, W. A. Nordland, R. D. Burbank, R. C. Sherwood, and L. G. Van Uitert. **186**, 476 (1969)
Cohen, M. I.
Lattice Absorption in Strontium Titanate—M. I. Cohen, R. C. Casella, R. F. Blunt, and R. A. Forman. **186**, 834 (1969)
Coleman, R. A.
Pion Lifetime, $\rho\pi$ and $\sigma\pi$ Intermediate States, and Sum Rules—R. A. Coleman and J. W. Moffat. **186**, 1635 (1969)
Collins, C. B.
Equivalent Excited-State Temperature of a High-Pressure Plasma in which the Electron Temperature Exceeds the Gas Temperature—C. B. Collins. **186**, 113 (1969)
Coon, Darryl D.
Quantization Conditions for Linear and Nonlinear Trajectories—Darryl D. Coon. **186**, 1422 (1969)
Corliss, L. M.
Magnetic Neutron Scattering in Dysprosium Aluminum Garnet. I. Long-Range Order—J. C. Norvell, W. P. Wolf, L. M. Corliss, J. M. Hastings, and R. Nathans. **186**, 557 (1969)
Magnetic Neutron Scattering in Dysprosium Aluminum Garnet. II. Short-Range Order and Critical Scattering—J. C. Norvell, W. P. Wolf, L. M. Corliss, J. M. Hastings, and R. Nathans. **186**, 567 (1969)
Crawford, R. K.
Pressure-Induced Phonon Frequency Shifts Measured by Raman Scattering—S. S. Mitra, O. Brafman, W. B. Daniels, and R. K. Crawford. **186**, 942 (1969)
Crecelius, G.
Hyperfine Interactions in Europium Iron Garnet—M. Stachel, S. Hüfner, G. Crecelius, and D. Quitmann. **186**, 355 (1969)
Crosignani, Bruno
Quantum Theory of a Randomly Modulated Harmonic Oscillator—Bruno Crosignani, Paolo Di Porto, and Salvatore Solimeno. **186**, 1342 (1969)
Cutler, P. H.
Calculation of Band-Structure Effects in Field-Emission Tunneling from Tungsten—Douglas Nagy and P. H. Cutler. **186**, 651 (1969)
Dahm, A. J.
Erratum: Evidence for Condensation of He^3 Atoms on the Surface of Bubbles in Liquid He^4 [**180**, 259 (1969)]—A. J. Dahm. **186**, 266 (1969)
Damask, A. C.
Hall Mobility of Holes in Anthracene—A. I. Korn, R. A. Arndt, and A. C. Damask. **186**, 938 (1969)
Daniels, W. B.
Pressure-Induced Phonon Frequency Shifts Measured by Raman Scattering—S. S. Mitra, O. Brafman, W. B. Daniels, and R. K. Crawford. **186**, 942 (1969)
Das, T. P.
Erratum: Many-Body Approach to Hyperfine Structure in the ^2P State of Lithium [**178**, 103 (1969)]—J. D. Lyons, R. T. Pu, and T. P. Das. **186**, 266 (1969)
Theory of the Self-Trapped Hole in CaF_2—A. Norman Jette and T. P. Das. **186**, 919 (1969)

Davidović, D. M.
Resonant Charge Exchange of the Negative Ions in Slow Collisions with Atoms—D. M. Davidović and R. K. Janev. **186**, 89 (1969)
Transport Properties of Negative Ions in Their Parent Gases—S. S. Pešić, R. K. Janev, and D. M. Davidović. **186**, 95 (1969)
Deegan, R. A.
Total Energy of *d*-Band Metals: Alkaline-Earth and Noble Metals—R. A. Deegan. **186**, 619 (1969)
Delbourgo, R.
Reggeization in Supermultiplet Theories—R. Delbourgo and Abdus Salam. **186**, 1516 (1969)
der Mateosian, E.
Study of the Isobars Cd^{113m} and In^{113m}—E. der Mateosian and M. Goldhaber. **186**, 1285 (1969)
DeShazer, L. G.
Spectral Broadening of Europium Ions in Glass—D. K. Rice and L. G. DeShazer. **186**, 387 (1969)
Deslattes, Richard D.
Relative Energy Measurements in the *K* Series of Argon—Richard D. Deslattes. **186**, 1 (1969)
Detrio, John A.
Line Strengths of the ^6P Multiplets of Gd^{3+} in CaF_2 at Cubic Sites—John A. Detrio. **186**, 339 (1969)
Deutsch, C.
Asymptotic Behavior of the Generalized Width and Shift Functions in the Electron-Impact Broadening Theory of Neutral Spectral Lines in Plasmas—C. Deutsch, L. Herman, and H. W. Drawin. **186**, 204 (1969)
Dick, B. G.
Alkali-Halide Mixed Crystals—B. G. Dick and Kyler F. Nelson. **186**, 953 (1969)
Dilley, James
Branch Cuts in the Balázs Method—James Dilley. **186**, 1678 (1969)
Di Porto, Paolo
Quantum Theory of a Randomly Modulated Harmonic Oscillator—Bruno Crosignani, Paolo Di Porto, and Salvatore Solimeno. **186**, 1342 (1969)
Dobrzynski, Léonard
Effect of Surface Pinning Fields on the Properties of the Heisenberg Ferromagnet—Léonard Dobrzynski and D. L. Mills. **186**, 538 (1969)
Döhler, G.
Influence of Boundary Conditions on High-Field Domains in Gunn Diodes—K. W. Böer and G. Döhler. **186**, 793 (1969)
Donahue, D. J.
Mean Lives, Branching Ratios, and Excitation Energies of Levels in ^{20}F below 4 MeV—R. L. Hershberger, M. J. Wozniak, Jr., and D. J. Donahue. **186**, 1167 (1969)
Dowman, J. E.
Selection Rule for Tunneling from Superconductors—J. E. Dowman, M. L. A. MacVicar, and J. R. Waldram. **186**, 452 (1969)
Drake, C. W.
Measurement of Polarization Effects in the $H^2(d,p)H^3$ Reaction at 140 keV—R. I. Steinberg, C. W. Drake, and D. C. Bonar. **186**, 1059 (1969)
Drawin, H. W.
Asymptotic Behavior of the Generalized Width and Shift Functions in the Electron-Impact Broadening Theory of Neutral Spectral Lines in Plasmas—C. Deutsch, L. Herman, and H. W. Drawin. **186**, 204 (1969)
Dreizler, R. M.
Methods for Calculating Ground-State Correlations of Vibrational Nuclei—R. E. Johnson, R. M. Dreizler, and A. Klein. **186**, 1289 (1969)
DuBois, D. F.
Electron Correlation Effects on Plasmon Damping and Ultraviolet Absorption in Metals—D. F. DuBois and M. G. Kivelson. **186**, 409 (1969)
Duffy, R. J.
Normal-Fluid Densities in Liquid Helium II under Pressure—R. H. Romer and R. J. Duffy. **186**, 255 (1969)
Duke, C. B.
Plasmon Excitation by Electron Tunneling—C. B. Duke. **186**, 588 (1969)
Dunlap, B. D.
Nuclear Quadrupole Moment of ^{237}Np—B. D. Dunlap and G. M. Kalvius. **186**, 1296 (1969)
Eagles, D. M.
Possible Pairing without Superconductivity at Low Carrier Concentrations in Bulk and Thin-Film Superconducting Semiconductors—D. M. Eagles. **186**, 456 (1969)
Eck, J. S.
Various Nuclear-Potential Descriptions of the Elastic Scattering of $^{16}O+^{40}Ca$—J. S. Eck, R. A. LaSalle, and D. Robson. **186**, 1132 (1969)
Edwards, R. T.
Measurement of the Ratio of the τ' Partial Decay Rates: $\Gamma(K^-\to\pi^-\pi^0\pi^0)/\Gamma(K^+\to\pi^+\pi^0\pi^0)$—D. Herzo, D. Banner, E. Beier, W. K. Bertram, R. T. Edwards, H. Frauenfelder, L. J. Koester, E. Rosenberg, A. Russell, S. Segler, and A. Wattenberg. **186**, 1403 (1969)
Einspruch, N. G.
Galvanomagnetic Studies of Sn-Doped Bi. II. Negative Fermi Energies—R. T. Bate, N. G. Einspruch, and P. J. May, Jr. **186**, 599 (1969)
Ellsworth, L. D.
Gamma Decay of Analog Resonances in the $^{48}Ti(p,\gamma)^{49}V$ Reaction—J. C. Legg, D. G. Megli, D. R. Abraham, L. D. Ellsworth, and S. Hechtl. **186**, 1138 (1969)
Euwema, R. N.
Electronic Band Structure and Related Properties of Cubic AlP—D. J. Stukel and R. N. Euwema. **186**, 754 (1969)
Everett, Allen E.
ρ-f^0 Double Bootstrap by the Balázs Method—Adel F. Antippa and Allen E. Everett. **186**, 1571 (1969)
Ewald, A. W.
Spin Splitting of Landau Levels and the Effective *g* Factor in Gray Tin—B. L. Booth and A. W. Ewald. **186**, 770 (1969)
Facey, O. E.
Optical Absorption and Luminescence of Irradiated MgF_2—O. E. Facey and W. A. Sibley. **186**, 926 (1969)
Federman, P.
$J=0^+$ States in Ca^{40} and Ca^{42}—P. Federman and S. Pittel. **186**, 1106 (1969)
Ferrell, Richard A.
Temperature Dependence of the Infrared Divergence in the Degenerate Fermi Gas—Richard A. Ferrell. **186**, 399 (1969)
Fetter, Alexander L.
Quantum Theory of Superfluid Vortices. III. Inelastic Phonon Scattering—Alexander L. Fetter. **186**, 128 (1969)
Finegold, Leonard
Specific Heat of Three Magnetic Linear-Chain Antiferromagnets—Douglas H. Lowndes, Jr., Leonard Finegold, R. N. Rogers, and Bruno Morosin. **186**, 515 (1969)
Fischbach, E.
Schwinger Terms, Field Algebra, the Parity-Violating Internucleon Potential, and Models of the Weak Hamiltonian—E. Fischbach, D. Tadić, and K. Trabert. **186**, 1688 (1969)
Fischer, C. R.
Calculation of Electronic States of Li_2^+ as a Free Ion and in a Point-Ion Lattice—C. R. Fischer and P. J. Kemmey. **186**, 272 (1969)
Fleury, Paul A.
Brillouin Scattering in Simple Liquids: Argon and Neon—Paul A. Fleury and Jean Pierre Boon. **186**, 244 (1969)
Flory, David
Infinite-Momentum Limit of a Spinor Field Theory—David Flory. **186**, 1701 (1969)

Forman, R. A.
Lattice Absorption in Strontium Titanate—M. I. Cohen, R. C. Casella, R. F. Blunt, and R. A. Forman. **186**, 834 (1969)
Fowler, W. Beall
Conduction Bands in Cesium Fluoride—W. Beall Fowler and A. Barry Kunz. **186**, 956 (1969)
Frampton, P. H.
Regge Trajectories and Nucleon Structure—P. H. Frampton. **186**, 1419 (1969)
Frankel, R. B.
Nuclear Zeeman Effect in W^{182} in Iron—R. B. Frankel, Y. Chow, L. Grodzins, and J. Wulff. **186**, 381 (1969)
Frankl, D. R.
Thermal Conductivity of Silicon in the Boundary Scattering Regime—W. S. Hurst and D. R. Frankl. **186**, 801 (1969)
Frauenfelder, H.
Measurement of the Ratio of the τ' Partial Decay Rates: $\Gamma(K^-\to\pi^-\pi^0\pi^0)/\Gamma(K^+\to\pi^+\pi^0\pi^0)$—D. Herzo, D. Banner, E. Beier, W. K. Bertram, R. T. Edwards, H. Frauenfelder, L. J. Koester, E. Rosenberg, A. Russell, S. Segler, and A. Wattenberg. **186**, 1403 (1969)
Frederick, D. E.
$O^{16}(\gamma,p)N^{15}$ Angular Distributions over the Energy Range 21—33 MeV—D. E. Frederick, R. J. J. Stewart, and R. C. Morrison. **186**, 992 (1969)
Freeman, A. J.
Role of Interband Mixing in Exchange Coupling and Conduction-Electron Polarization in Metals—R. E. Watson, A. J. Freeman, and S. Koide. **186**, 625 (1969)
Freund, P. G. O.
Scattering and Production of Excited Hadrons—Richard C. Arnold and P. G. O. Freund. **186**, 1631 (1969)
Fuda, Michael G.
Unitary Pole Approximation and Binding Energy of the Trinucleon—T. Brady, M. Fuda, E. Harms, J. S. Levinger, and R. Stagat. **186**, 1069 (1969)
Separable t Matrices and the Three-Body Problem—Michael G. Fuda. **186**, 1078 (1969)
Fukai, Yuh
Calculation of Residual Resistivity in Aluminum and Lead Alloys: The Effect of Multiple Plane-Wave Character on The Residual Resistivity in Polyvalent Metals—Yuh Fukai. **186**, 697 (1969)
Fullenbaum, Martin S.
Lorenz Number for Metals with Magnetic Impurities—Sang Boo Nam and Martin S. Fullenbaum. **186**, 506 (1969)
Fultz, S. C.
Photoneutron Cross Sections for Sn^{116}, Sn^{117}, Sn^{118}, Sn^{119}, Sn^{120}, Sn^{124}, and Indium—S. C. Fultz, B. L. Berman, J. T. Caldwell, R. L. Bramblett, and M. A. Kelly. **186**, 1255 (1969)
Gallmann, A.
Positron Decays of ^{42}Ti and ^{38}Ca—A. Gallmann, E. Aslanides, F. Jundt, and E. Jacobs. **186**, 1160 (1969)
Garfinkel, A. F.
Reaction $\pi^+n\to K^+K^-p$ at 2.7 GeV/c—A. F. Garfinkel, S. Lichtman, R. J. Miller, and R. B. Willmann. **186**, 1400 (1969)
Gavenda, J. D.
Magnetoacoustic Effects in Very Pure Cd—J. D. Gavenda and F. H. S. Chang. **186**, 630 (1969)
Gazis, D. C.
Erratum: Theoretical Temperature Dependence of the Mean-Square Displacements and Velocities of Surface Atoms of Face-Centered Cubic Crystals [**180**, 716 (1969)]—R. F. Wallis, B. C. Clark, Robert Herman, and D. C. Gazis. **186**, 962 (1969)
German, K. .
Measurement of the Hanle Effect for the OH Radical—K. R. German and R. N. Zare. **186**, 9 (1969)
Giardini, A. A.
Effect of Pressure on the Néel Temperature of Magnetite—G. A. Samara and A. A. Giardini. **186**, 577 (1969)
Glashausser, C.
Spin Flip in the Inelastic Scattering of 19.6-MeV Protons from ^{54}Fe and ^{56}Fe—D. L. Hendrie, C. Glashausser, J. M. Moss, and J. Thirion. **186**, 1188 (1969)
Glasser, M. L.
g Factors for an Interacting Electron Gas—J. I. Kaplan and M. L. Glasser. **186**, 958 (1969)
Glassgold, A. E.
Erratum: Angular Distribution of the Outgoing Electrons in Electronic Ionization [**175**, 151 (1968)]—A. E. Glassgold and G. Ialongo. **186**, 266 (1969)
Glendenin, L. E.
Lifetime of the 11-keV Level in Cs^{134}—F. J. Lynch and L. E. Glendenin. **186**, 1250 (1969)
Glenn, J. E.
Reorientation-Effect Measurements on Cd^{114}—J. X. Saladin, J. E. Glenn, and R. J. Pryor. **186**, 1241 (1969)
Goldhaber, M.
Study of the Isobars Cd^{113m} and In^{113m}—E. der Mateosian and M. Goldhaber. **186**, 1285 (1969)
Goswami, K.
F-Center Distribution and Electron Channeling in NaCl—A. Choudhury, S. Chaudhuri, and K. Goswami. **186**, 885 (1969)
Gotsman, E.
Vector-Dominance Model and the Reaction $\gamma p\to\pi^+\Delta^{++}$—E. Gotsman. **186**, 1543 (1969)
Photoproduction of Vector Mesons in a Regge-Pole Model—E. Gotsman, P. D. Mannheim, and U. Maor. **186**, 1703 (1969)
Gounaris, G. J.
Vector-Meson Dominance and High-Energy Electroproduction of the ρ Meson—C. F. Cho and G. J. Gounaris. **186**, 1619 (1969)
Vector-Meson-Dominance Predictions on Inelastic Electron-Proton Scattering—C. F. Cho, G. J. Gounaris, and J. J. Sakurai. **186**, 1734 (1969)
Graboske, H. C., Jr.
Thermodynamic Properties of Nonideal Gases. I. Free-Energy Minimization Method—H. C. Graboske, Jr., D. J. Harwood, and F. J. Rogers. **186**, 210 (1969)
Gratzl, H.
Wave Damping in Plasma due to Scattering by Ion Sound Waves—H. Gratzl. **186**, 225 (1969)
Greiner, Walter
Higher-Order Effects in Electron-Nucleus Scattering—Christian Toepffer and Walter Greiner. **186**, 1044 (1969)
Griffioen, R. D.
Two-Phonon Triplet in ^{136}Ba and Decay of ^{136}La—R. A. Meyer and R. D. Griffioen. **186**, 1220 (1969)
Grodzins, L.
Nuclear Zeeman Effect in W^{182} in Iron—R. B. Frankel, Y. Chow, L. Grodzins, and J. Wulff. **186**, 381 (1969)
Gross, Franz
Three-Dimensional Covariant Integral Equations for Low-Energy Systems—Franz Gross. **186**, 1448 (1969)
Groves, S. H.
Inversion-Asymmetry and Warping-Induced Interband Magneto-Optical Transitions in InSb—C. R. Pidgeon and S. H. Groves. **186**, 824 (1969)
Gunion, John F.
Experimental Implications of the Bardakci-Ruegg Representations for Resonance Production—John F. Gunion and H. J. Yesian. **186**, 1415 (1969)
Gürman, E.
Neutron-Diffraction Measurement of the Lattice Parameter of Potassium Metal at 5.2°K—S. A. Werner, E. Gürman, and A. Arrott. **186**, 705 (1969)
Gutay, L. J.
Unique Set of $I=0$ S-Wave $\pi\pi$ Phase Shifts—J. H. Scharenguivel, L. J. Gutay, D. H. Miller, L. D. Jacobs, R. Keyser, D. Huwe, E. Marquit, F. Oppenheimer, W. Schultz, S. Marateck, J. D. Prentice, and E. West. **186**, 1387 (1969)

Halpern, Alvin M.
Orbital-Angular-Momentum Decomposition of the Three-Body Coupling Scheme: Muonic Molecules and the Hydrogen Molecular Ion—Alvin M. Halpern. **186**, 14 (1969)
Hamann, D. R.
Properties of the Renormalized Random-Phase Approximation for Dilute Magnetic Alloys—D. R. Hamann. **186**, 549 (1969)
Hamilton, J. H.
Hindrance Factors of Allowed $1^+ \rightarrow 0^+$ Decays in Light-Mass Even-Even Nuclei with $A = 66$–80—J. H. Hamilton and H. K. Carter. **186**, 1294 (1969)
Hannon, J. P.
Mössbauer Diffraction. II. Dynamical Theory of Mössbauer Optics—J. P. Hannon and G. T. Trammell. **186**, 306 (1969)
Haracz, Richard D.
Relativistic Two-Pion-Exchange Effects in Nucleon-Nucleon Scattering up to 350 MeV—Bruce M. Barker and Richard D. Haracz. **186**, 1624 (1969)
Harms, E.
Unitary Pole Approximation and Binding Energy of the Trinucleon—T. Brady, M. Fuda, E. Harms, J. S. Levinger, and R. Stagat. **186**, 1069 (1969)
Harris, W. R.
Beta Decay of B^{13}—K. W. Jones, W. R. Harris, M. T. McEllistrem, and D. E. Alburger. **186**, 978 (1969)
Harvey, B. G.
High-Spin States of Configuration $(1d_{5/2})_{5+,0}^2$ and $(1g_{9/2})_{9+,0}^2$ Strongly Populated by the (α,d) Reaction—C. C. Lu, M. S. Zisman, and B. G. Harvey. **186**, 1086 (1969)
Harwood, D. J.
Thermodynamic Properties of Nonideal Gases. I. Free-Energy Minimization Method—H. C. Graboske, Jr., D. J. Harwood, and F. J. Rogers. **186**, 210 (1969)
Hastings, J. M.
Magnetic Neutron Scattering in Dysprosium Aluminum Garnet. I. Long-Range Order—J. C. Norvell, W. P. Wolf, L. M. Corliss, J. M. Hastings, and R. Nathans. **186**, 557 (1969)
Magnetic Neutron Scattering in Dysprosium Aluminum Garnet. II. Short-Range Order and Critical Scattering—J. C. Norvell, W. P. Wolf, L. M. Corliss, J. M. Hastings, and R. Nathans. **186**, 567 (1969)
Hausmann, T.
Neutron Decay of Isobaric Analog Resonances in ^{90}Zr—K. P. Lieb and T. Hausmann. **186**, 1229 (1969)
Haymaker, Richard W.
Jost-Function Description for the Bethe-Salpeter Equation—Richard W. Haymaker and R. Blankenbecler. **186**, 1648 (1969)
Hechtl, S.
Gamma Decay of Analog Resonances in the $^{48}Ti(p,\gamma)^{49}V$ Reaction—J. C. Legg, D. G. Megli, D. R. Abraham, L. D. Ellsworth, and S. Hechtl. **186**, 1138 (1969)
Henderson, H. Thurman
Space-Charge-Limited Current in Neutron-Irradiated Silicon, with Evidence of the Complete Lampert Triangle—H. Thurman Henderson and K. L. Ashley. **186**, 811 (1969)
Hendrie, D. L.
Spin Flip in the Inelastic Scattering of 19.6-MeV Protons from ^{54}Fe and ^{56}Fe—D. L. Hendrie, C. Glashausser, J. M. Moss, and J. Thirion. **186**, 1188 (1969)
Herman, L.
Asymptotic Behavior of the Generalized Width and Shift Functions in the Electron-Impact Broadening Theory of Neutral Spectral Lines in Plasmas—C. Deutsch, L. Herman, and H. W. Drawin. **186**, 204 (1969)
Herman, Robert
Erratum: Theoretical Temperature Dependence of the Mean-Square Displacements and Velocities of Surface Atoms of Face-Centered Cubic Crystals [**180**, 716 (1969)]—R. F. Wallis, B. C. Clark, Robert Herman, and D. C. Gazis. **186**, 962 (1969)
Hershberger, R. L.
Mean Lives, Branching Ratios, and Excitation Energies of Levels in ^{20}F below 4 MeV—R. L. Hershberger, M. J. Wozniak, Jr., and D. J. Donahue. **186**, 1167 (1969)
Herzo, D.
Measurement of the Ratio of the τ' Partial Decay Rates: $\Gamma(K^- \rightarrow \pi^-\pi^0\pi^0)/\Gamma(K^+ \rightarrow \pi^+\pi^0\pi^0)$—D. Herzo, D. Banner, E. Beier, W. K. Bertram, R. T. Edwards, H. Frauenfelder, L. J. Koester, E. Rosenberg, A. Russell, S. Segler, and A. Wattenberg. **186**, 1403 (1969)
Hewitt, R. G. L.
Wave Functions for Nuclear-Structure Calculations—S. T. Butler, R. G. L. Hewitt, B. H. J. McKellar, I. R. Nicholls, and J. S. Truelove. **186**, 963 (1969)
Hohlfeder, Jacque J.
Half-Life of Mn^{53}—Jacque J. Hohlfeder. **186**, 1126 (1969)
Holbrow, C. H.
Nuclear Structure of F^{18}—L. M. Polsky, C. H. Holbrow, and R. Middleton. **186**, 966 (1969)
Hone, D.
Microscopic Inhomogeneous Broadening and Nuclear Spin-Spin Interactions—D. Hone, V. Jaccarino, Tin Ngwe, and P. Pincus. **186**, 291 (1969)
Hopfield, J. J.
Angular Momentum and Transition-Metal Superconductivity—J. J. Hopfield. **186**, 443 (1969)
Hopke, P. K.
Level Structure of $Te^{116,118,120,122}$—E. H. Spejewski, P. K. Hopke, and F. W. Loeser, Jr. **186**, 1270 (1969)
Horing, Norman J.
Friedel Density Oscillations about a Coulombic Impurity in a High Magnetic Field—Norman J. Horing. **186**, 434 (1969)
Horn, D.
$\alpha = 0$ Wrong-Signature Pole in πN Charge Exchange—R. Aviv and D. Horn. **186**, 1510 (1969)
Hsuan, H. C. S.
Time-of-Flight Studies of Propagating Electron Plasma Waves in Tonks-Dattner Resonances—S. Aksornkitti, H. C. S. Hsuan, and K. E. Lonngren. **186**, 160 (1969)
Hu, S. M.
Erratum: General Theory of Impurity Diffusion in Semiconductors via the Vacancy Mechanism [**180**, 773 (1969)]—S. M. Hu. **186**, 962 (1969)
Huber, D. L.
Energy Transport in Magnetic Chains—D. L. Huber, J. S. Semura, and C. G. Windsor. **186**, 534 (1969)
Huff, Robert W.
Simplified Calculation of Lamb Shift Using Algebraic Techniques —Robert W. Huff. **186**, 1367 (1969)
Hüfner, S.
Hyperfine Interactions in Europium Iron Garnet—M. Stachel, S. Hüfner, G. Crecelius, and D. Quitmann. **186**, 355 (1969)
Hunter, T. F.
Electronic Transitions of the F Center in Alkali Halides—T. F. Hunter. **186**, 933 (1969)
Hurst, W. S.
Thermal Conductivity of Silicon in the Boundary Scattering Regime—W. S. Hurst and D. R. Frankl. **186**, 801 (1969)
Huwe, D.
Unique Set of $I = 0$ S-Wave $\pi\pi$ Phase Shifts—J. H. Scharenguivel, L. J. Gutay, D. H. Miller, L. D. Jacobs, R. Keyser, D. Huwe, E. Marquit, F. Oppenheimer, W. Schultz, S. Marateck, J. D. Prentice, and E. West. **186**, 1387 (1969)
Hyman, David S.
Evaporation from Superfluid Helium—David S. Hyman, Marian O. Scully, and Allan Widom. **186**, 231 (1969)
Iadonisi, G.
Band Structure and Impurity States—F. Bassani, G. Iadonisi, and B. Preziosi. **186**, 735 (1969)

Ialongo, G.
Erratum: Angular Distribution of the Outgoing Electrons in Electronic Ionization [175, 151 (1968)]—A. E. Glassgold and G. Ialongo. **186**, 266 (1969)
Inokuti, Mitio
Total Cross Sections for Inelastic Scattering of Charged Particles by Atoms and Molecules. III. Accurate Bethe Cross Section for Ionization of Helium—Mitio Inokuti and Yong-Ki Kim. **186**, 100 (1969)
Ishihara, Takeshi
Hydrogenic- and Sturmian-Function Expansions in Three-Body Atomic Problems—Joseph C. Y. Chen and Takeshi Ishihara. **186**, 25 (1969)
Jaccarino, V.
Microscopic Inhomogeneous Broadening and Nuclear Spin-Spin Interactions—D. Hone, V. Jaccarino, Tin Ngwe, and P. Pincus. **186**, 291 (1969)
Jackiw, R.
Anomalous Commutators and the Box Diagram—David G. Boulware and R. Jackiw. **186**, 1442 (1969)
Jacobi, Lee
Mass Spectra and Classical Dynamics—Ralph Schiller and Lee Jacobi. **186**, 1360 (1969)
Jacobs, E.
Positron Decays of ^{42}Ti and ^{38}Ca—A. Gallmann, E. Aslanides, F. Jundt, and E. Jacobs. **186**, 1160 (1969)
Jacobs, L. D.
Unique Set of $I=0$ S-Wave $\pi\pi$ Phase Shifts—J. H. Scharenguivel, L. J. Gutay, D. H. Miller, L. D. Jacobs, R. Keyser, D. Huwe, E. Marquit, F. Oppenheimer, W. Schultz, S. Marateck, J. D. Prentice, and E. West. **186**, 1387 (1969)
Jaiswal, A. K.
Photon Counting and Intensity Fluctuations of Partially Polarized Gaussian Light—A. K. Jaiswal and C. L. Mehta. **186**, 1355 (1969)
Janev, R. K.
Resonant Charge Exchange of the Negative Ions in Slow Collisions with Atoms—D. M. Davidović and R. K. Janev. **186**, 89 (1969)
Transport Properties of Negative Ions in Their Parent Gases—S. S. Pešić, R. K. Janev, and D. M. Davidović. **186**, 95 (1969)
Janis, Allen I.
Comments on Einstein Scalar Solutions—Allen I. Janis, David C. Robinson, and Jeffrey Winicour. **186**, 1729 (1969)
Jette, A. Norman
Theory of the Self-Trapped Hole in CaF_2—A. Norman Jette and T. P. Das. **186**, 919 (1969)
Johnson, Porter W.
Solutions of Partial-Wave Dispersion Relations. II.—Porter W. Johnson. **186**, 1583 (1969)
Johnson, R. E.
Methods for Calculating Ground-State Correlations of Vibrational Nuclei—R. E. Johnson, R. M. Dreizler, and A. Klein. **186**, 1289 (1969)
Jones, B. K.
Flow of Helium II through Fine Pores—B. K. Jones. **186**, 164 (1969)
Critical Velocities of Ions in Liquid Helium—B. K. Jones. **186**, 168 (1969)
Jones, C. M.
Elastic and Inelastic Scattering of Protons from Krypton—H. J. Kim, J. K. Bair, C. M. Jones, and H. B. Willard. **186**, 1110 (1969)
Jones, K. W.
Beta Decay of B^{13}—K. W. Jones, W. R. Harris, M. T. McEllistrem, and D. E. Alburger. **186**, 978 (1969)
Joshi, S. K.
Electron Correlation in Ferromagnetism—R. Kishore and S. K. Joshi. **186**, 484 (1969)
Green's-Function Method for Energy Bands in Disordered Alloys—Application to Alpha Brass—M. M. Pant and S. K. Joshi. **186**, 675 (1969)
Jundt, F.
Positron Decays of ^{42}Ti and ^{38}Ca—A. Gallmann, E. Aslanides, F. Jundt, and E. Jacobs. **186**, 1160 (1969)
Kahn, Frederic J.
Ultraviolet Magneto-Optical Properties of Single-Crystal Orthoferrites, Garnets, and Other Ferric Oxide Compounds—Frederic J. Kahn, P. S. Pershan, and J. P. Remeika. **186**, 891 (1969)
Kalvius, G. M.
Nuclear Quadrupole Moment of ^{237}Np—B. D. Dunlap and G. M. Kalvius. **186**, 1296 (1969)
Kamal, A. N.
Calculation of Re ϵ for the K^0-$\bar{K}^0$ System—A. N. Kamal and B. G. Kenny. **186**, 1473 (1969)
Kaplan, J. I.
g Factors for an Interacting Electron Gas—J. I. Kaplan and M. L. Glasser. **186**, 958 (1969)
Katz, Robert
Particle Tracks in Emulsion—Robert Katz and E. J. Kobetich. **186**, 344 (1969)
Kelly, M. A.
Photoneutron Cross Sections for Sn^{116}, Sn^{117}, Sn^{118}, Sn^{119}, Sn^{120}, Sn^{124}, and Indium—S. C. Fultz, B. L. Berman, J. T. Caldwell, R. L. Bramblett, and M. A. Kelly. **186**, 1255 (1969)
Kemmey, P. J.
Calculation of Electronic States of Li_2^+ as a Free Ion and in a Point-Ion Lattice—C. R. Fischer and P. J. Kemmey. **186**, 272 (1969)
Kenny, B. G.
Calculation of Re ϵ for the K^0-$\bar{K}^0$ System—A. N. Kamal and B. G. Kenny. **186**, 1473 (1969)
Ketterson, J. B.
Fourier-Series Representation of the Pt Fermi Surface—J. B. Ketterson, F. M. Mueller, and L. R. Windmiller. **186**, 656 (1969)
Keyser, R.
Unique Set of $I=0$ S-Wave $\pi\pi$ Phase Shifts—J. H. Scharenguivel, L. J. Gutay, D. H. Miller, L. D. Jacobs, R. Keyser, D. Huwe, E. Marquit, F. Oppenheimer, W. Schultz, S. Marateck, J. D. Prentice, and E. West. **186**, 1387 (1969)
Kim, H. J.
Elastic and Inelastic Scattering of Protons from Krypton—H. J. Kim, J. K. Bair, C. M. Jones, and H. B. Willard. **186**, 1110 (1969)
Kim, Yong-Ki
Total Cross Sections for Inelastic Scattering of Charged Particles by Atoms and Molecules. III. Accurate Bethe Cross Section for Ionization of Helium—Mitio Inokuti and Yong-Ki Kim. **186**, 100 (1969)
Kinnersley, William
Field of an Arbitrarily Accelerating Point Mass—William Kinnersley. **186**, 1335 (1969)
Kishore, R.
Electron Correlation in Ferromagnetism—R. Kishore and S. K. Joshi. **186**, 484 (1969)
Kiss, Z. J.
Energy Levels of Ce^{2+} in CaF_2—R. C. Alig, Z. J. Kiss, J. P. Brown, and D. S. McClure. **186**, 276 (1969)
Kivelson, M. G.
Electron Correlation Effects on Plasmon Damping and Ultraviolet Absorption in Metals—D. F. DuBois and M. G. Kivelson. **186**, 409 (1969)
Klein, A.
Methods for Calculating Ground-State Correlations of Vibrational Nuclei—R. E. Johnson, R. M. Dreizler, and A. Klein. **186**, 1289 (1969)

Klein, Miles V.
Some Properties of Phonon Thermal-Conductivity Resonances—Miles V. Klein. **186**, 839 (1969)
Thermal Conductivity of Alkali Halide Crystals Containing the Hydroxide Ion—Ralph L. Rosenbaum, Cheuk-Kin Chau, and Miles V. Klein. **186**, 852 (1969)
Kobetich, E. J.
Particle Tracks in Emulsion—Robert Katz and E. J. Kobetich. **186**, 344 (1969)
Koch, J. F.
Electron Scattering at a Rough Surface—J. F. Koch and T. E. Murray. **186**, 722 (1969)
Koester, L. J.
Measurement of the Ratio of the τ' Partial Decay Rates: $\Gamma(K^-\to\pi^-\pi^0\pi^0)/\Gamma(K^+\to\pi^+\pi^0\pi^0)$—D. Herzo, D. Banner, E. Beier, W. K. Bertram, R. T. Edwards, H. Frauenfelder, L. J. Koester, E. Rosenberg, A. Russell, S. Segler, and A. Wattenberg. **186**, 1403 (1969)
Kogut, John B.
Production of Strongly Interacting W's in Inelastic Electron-Nucleon Collisions—John B. Kogut. **186**, 1540 (1969)
Koide, S.
Role of Interband Mixing in Exchange Coupling and Conduction-Electron Polarization in Metals—R. E. Watson, A. J. Freeman, and S. Koide. **186**, 625 (1969)
Kolopus, J. L.
Luminescence of the F^+ Center in MgO—Y. Chen, J. L. Kolopus, and W. A. Sibley. **186**, 865 (1969)
Kor, S. K.
Origin of Ultrasonic Absorption in Heavy Water—S. K. Kor, Gulshan Rai, and O. N. Awasthi. **186**, 105 (1969)
Korn, A. I.
Hall Mobility of Holes in Anthracene—A. I. Korn, R. A. Arndt, and A. C. Damask. **186**, 938 (1969)
Krass, Allen S.
Nonrelativistic Strong-Coupling Model with a Recoiling Source—Allen S. Krass. **186**, 1713 (1969)
Krén, E.
Polarized-Neutron-Diffraction Study of Magnetic Moments in Yttrium-Cobalt Alloys—E. Krén, J. Schweizer, and F. Tasset. **186**, 479 (1969)
Kunz, A. Barry
Conduction Bands in Cesium Fluoride—W. Beall Fowler and A. Barry Kunz. **186**, 956 (1969)
Kushwaha, R. S.
Gravitational Field of a Sphere Composed of Concentric Shells—A. L. Mehra, P. C. Vaidya, and R. S. Kushwaha. **186**, 1333 (1969)
Kwak, N.
Spin Correlations in $\bar{p}p\to\bar{\Lambda}\Lambda$ at 2.19 GeV/c—N. Kwak, G. H. Mall, J. E. Manweiler, M. L. Nicholas, M. S. Redeker, T. A. Stringer, and R. Stump. **186**, 1392 (1969)
Lam, C. S.
Complex Angular Momentum and Regge Asymptotic Behavior of the Virasoro Model—Ernestos N. Argyres and C. S. Lam. **186**, 1532 (1969)
Lankard, J. R.
Infrared Laser Action in Sr Vapor Resulting from Optical Pumping and Inelastic Collisions—P. P. Sorokin and J. R. Lankard. **186**, 342 (1969)
LaSalle, R. A.
Various Nuclear-Potential Descriptions of the Elastic Scattering of $^{16}O+^{40}Ca$—J. S. Eck, R. A. LaSalle, and D. Robson. **186**, 1132 (1969)
Lax, Benjamin
Effects of a Magnetic Field on Optical Mixing Due to Nonparabolicity in n-InSb—R. W. Bierig, Margaret H. Weiler, and Benjamin Lax. **186**, 747 (1969)
Legg, J. C.
Gamma Decay of Analog Resonances in the $^{48}Ti(p,\gamma)^{49}V$ Reaction—J. C. Legg, D. G. Megli, D. R. Abraham, L. D. Ellsworth, and S. Hechtl. **186**, 1138 (1969)
Legvold, S.
High-Field Magnetization of Thulium Single Crystals—D. B. Richards and S. Legvold. **186**, 508 (1969)
Leung, C. C. H.
Some Features of the Single Separable Potential with Attraction and Repulsion—C. C. H. Leung and S. C. Park. **186**, 1297 (1969)
Levanoni, M.
g-Factor Measurements in Os^{192} and Pt^{192}—M. Levanoni. **186**, 1253 (1969)
LeVine, M. J.
A Study of $T=3/2$ States in N^{13}—M. J. LeVine and P. D. Parker. **186**, 1021 (1969)
Levinger, J. S.
Unitary Pole Approximation and Binding Energy of the Trinucleon—T. Brady, M. Fuda, E. Harms, J. S. Levinger, and R. Stagat. **186**, 1069 (1969)
Lévy, Maurice
Eikonal Approximation in Quantum Field Theory—Maurice Lévy and Joseph Sucher. **186**, 1656 (1969)
Lewis, R. R., Jr.
Perturbing Effect of Two Rotating Fields on Angular Correlations—R. R. Lewis, Jr.. **186**, 352 (1969)
Li, L. F.
Model for Higher-Order Weak Interactions—L. F. Li and G. Segrè. **186**, 1477 (1969)
Lichtman, S.
Reaction $\pi^+n\to K^+K^-p$ at 2.7 GeV/c—A. F. Garfinkel, S. Lichtman, R. J. Miller, and R. B. Willmann. **186, 1400 (1969)**
Lieb, K. P.
Neutron Decay of Isobaric Analog Resonances in ^{90}Zr—C. P. Lieb and T. Hausmann. **186**, 1229 (1969)
Lineberger, W. C.
Positive Ions in Nitric Oxide Afterglows—W. C. Lineberger and L. J. Puckett. **186**, 116 (1969)
Lipinski, H. M.
Regge Trajectory of the Pion in the $N\bar{N}$ Bethe-Salpeter Equation—H. M. Lipinski. **186**, 1643 (1969)
Lipworth, E.
Permanent Electric Dipole Moment of the Cesium Atom. An Upper Limit to the Electric Dipole Moment of the Electron—T. S. Stein, J. P. Carrico, E. Lipworth, and M. C. Weisskopf. **186**, 39 (1969)
Lobo, R.
Spin Correlations in the Electron Liquid—R. Lobo, K. S. Singwi, and M. P. Tosi. **186**, 470 (1969)
Loeser, F. W., Jr.
Level Structure of $Te^{116,118,120,122}$—E. H. Spejewski, P. K. Hopke, and F. W. Loeser, Jr.. **186**, 1270 (1969)
Lonngren, K. E.
Time-of-Flight Studies of Propagating Electron Plasma Waves in Tonks-Dattner Resonances—S. Aksornkitti, H. C. S. Hsuan, and K. E. Lonngren. **186**, 160 (1969)
Louisell, W. H.
Unification of Phase-Space Descriptions of Quantum Markovian Systems—J. H. Marburger and W. H. Louisell. **186**, 174 (1969)
Lowndes, Douglas H., Jr.
Specific Heat of Three Magnetic Linear-Chain Antiferromagnets—Douglas H. Lowndes, Jr., Leonard Finegold, R. N. Rogers, and Bruno Morosin. **186**, 515 (1969)
Lu, C. C.
High-Spin States of Configuration $(1d_{5/2})^{5+,0}$ and $(1g_{9/2})^{9+,0}$ Strongly Populated by the (α,d) Reaction—C. C. Lu, M. S. Zisman, and B. G. Harvey. **186**, 1086 (1969)
Lynch, F. J.
Lifetime of the 11-keV Level in Cs^{134}—F. J. Lynch and L. E. Glendenin. **186**, 1250 (1969)

Lyons, J. D.
Erratum: Many-Body Approach to Hyperfine Structure in the ^2P State of Lithium [**178**, 103 (1969)]—J. D. Lyons, R. T. Pu, and T. P. Das. **186**, 266 (1969)
Lys, J.
Direct-Channel Resonances in Antiproton-Proton Elastic Scattering—J. Lys. **186**, 1691 (1969)
MacVicar, M. L. A.
Selection Rule for Tunneling from Superconductors—J. E. Dowman, M. L. A. MacVicar, and J. R. Waldram. **186**, 452 (1969)
Maier, H. J.
Gamma-Ray Angular Correlations and Lifetime Measurements for Some Excited States of Ne^{21}—J. G. Pronko, C. Rolfs, and H. J. Maier. **186**, 1174 (1969)
Mall, G. H.
Spin Correlations in $\bar{p}p \rightarrow \bar{\Lambda}\Lambda$ at 2.19 GeV/c—N. Kwak, G. H. Mall, J. E. Manweiler, M. L. Nicholas, M. S. Redeker, T. A. Stringer, and R. Stump. **186**, 1392 (1969)
Mann, A.
Approach to the Nuclear Many-Body Problem by a Variationally Determined Transformation—A. Mann, H. Nissimov, and I. Unna. **186**, 1104 (1969)
Mannheim, P. D.
Photoproduction of Vector Mesons in a Regge-Pole Model—E. Gotsman, P. D. Mannheim, and U. Maor. **186**, 1703 (1969)
Manweiler, J. E.
Spin Correlations in $\bar{p}p \rightarrow \bar{\Lambda}\Lambda$ at 2.19 GeV/c—N. Kwak, G. H. Mall, J. E. Manweiler, M. L. Nicholas, M. S. Redeker, T. A. Stringer, and R. Stump. **186**, 1392 (1969)
Maor, U.
Photoproduction of Vector Mesons in a Regge-Pole Model—E. Gotsman, P. D. Mannheim, and U. Maor. **186**, 1703 (1969)
Marateck, S.
Unique Set of $I=0$ S-Wave $\pi\pi$ Phase Shifts—J. H. Scharenguivel, L. J. Gutay, D. H. Miller, L. D. Jacobs, R. Keyser, D. Huwe, E. Marquit, F. Oppenheimer, W. Schultz, S. Marateck, J. D. Prentice, and E. West. **186**, 1387 (1969)
Marburger, J. H.
Unification of Phase-Space Descriptions of Quantum Markovian Systems—J. H. Marburger and W. H. Louisell. **186**, 174 (1969)
March, N. H.
Electronic Structure of Point Defects and Impurities in Metals—J. C. Stoddart, N. H. March, and M. J. Stott. **186**, 683 (1969)
March, R. H.
Tunneling Investigation of Energy-Gap Anisotropy in Superconducting Bulk Pb—B. L. Blackford and R. H. March. **186**, 397 (1969)
Marquit, E.
Unique Set of $I=0$ S-Wave $\pi\pi$ Phase Shifts—J. H. Scharenguivel, L. J. Gutay, D. H. Miller, L. D. Jacobs, R. Keyser, D. Huwe, E. Marquit, F. Oppenheimer, W. Schultz, S. Marateck, J. D. Prentice, and E. West. **186**, 1387 (1969)
Martens, M.
Theory of Donor-Acceptor Dipairs in Semiconductors—M. Martens, L. Mehrkam, and Ferd Williams. **186**, 757 (1969)
Martin, Douglas L.
Specific Heat of Pure Zinc and Dilute Zinc-Manganese Alloys below 5°K—Douglas L. Martin. **186**, 642 (1969)
Martin, Richard M.
Dielectric Screening Model for Lattice Vibrations of Diamond-Structure Crystals—Richard M. Martin. **186**, 871 (1969)
Mathur, Suresh C.
(n,n') and $(n,2n)$ Reactions in Several Elements at 14.8 MeV—Suresh C. Mathur, P. S. Buchanan, and I. L. Morgan. **186**, 1038 (1969)
May, P. J., Jr.
Galvanomagnetic Studies of Sn-Doped Bi. II. Negative Fermi Energies—R. T. Bate, N. G. Einspruch, and P. J. May, Jr. **186**, 599 (1969)
McAlister, A. J.
Calculation of the Soft X-Ray K-Emission and Absorption Spectra on Metallic Li—A. J. McAlister. **186**, 595 (1969)
McClure, D. S.
Energy Levels of Ce^{2+} in CaF_2—R. C. Alig, Z. J. Kiss, J. P. Brown, and D. S. McClure. **186**, 276 (1969)
McCusker, C. B. A.
Lightly Ionizing Particles in Air-Shower Cores—I. Cairns, C. B. A. McCusker, L. S. Peak, and R. L. S. Woolcott. **186**, 1394 (1969)
McEllistrem, M. T.
Beta Decay of B^{13}—K. W. Jones, W. R. Harris, M. T. McEllistrem, and D. E. Alburger. **186**, 978 (1969)
McGroddy, James C.
Bulk Current Instabilities in Uniaxially Strained Germanium—John E. Smith, Jr., James C. McGroddy, and Marshall I. Nathan. **186**, 727 (1969)
McKellar, B. H. J.
Wave Functions for Nuclear-Structure Calculations—S. T. Butler, R. G. L. Hewitt, B. H. J. McKellar, I. R. Nicholls, and J. S. Truelove. **186**, 963 (1969)
Megli, D. G.
Gamma Decay of Analog Resonances in the $^{48}Ti(p,\gamma)^{49}V$ Reaction—J. C. Legg, D. G. Megli, D. R. Abraham, L. D. Ellsworth, and S. Hechtl. **186**, 1138 (1969)
Mehra, A. L.
Gravitational Field of a Sphere Composed of Concentric Shells—A. L. Mehra, P. C. Vaidya, and R. S. Kushwaha. **186**, 1333 (1969)
Mehrkam, L.
Theory of Donor-Acceptor Dipairs in Semiconductors—M. Martens, L. Mehrkam, and Ferd Williams. **186**, 757 (1969)
Mehta, C. L.
Photon Counting and Intensity Fluctuations of Partially Polarized Gaussian Light—A. K. Jaiswal and C. L. Mehta. **186**, 1355 (1969)
Melcher, R. L.
Ultrasonic Propagation in $RbMnF_3$. II. Magnetoelastic Properties—R. L. Melcher and D. I. Bolef. **186**, 491 (1969)
Meyer, R. A.
Two-Phonon Triplet in ^{136}Ba and Decay of ^{136}La—R. A. Meyer and R. D. Griffioen. **186**, 1220 (1969)
Michael, C.
Experimental Aspects of Dual Theories for Baryons—V. Barger and C. Michael. **186**, 1592 (1969)
Middleton, R.
Nuclear Structure of F^{18}—L. M. Polsky, C. H. Holbrow, and R. Middleton. **186**, 966 (1969)
Miller, D. H.
Unique Set of $I=0$ S-Wave $\pi\pi$ Phase Shifts—J. H. Scharenguivel, L. J. Gutay, D. H. Miller, L. D. Jacobs, R. Keyser, D. Huwe, E. Marquit, F. Oppenheimer, W. Schultz, S. Marateck, J. D. Prentice, and E. West. **186**, 1387 (1969)
Miller, R. J.
Reaction $\pi^+ n \rightarrow K^+ K^- p$ at 2.7 GeV/c—A. F. Garfinkel, S. Lichtman, R. J. Miller, and R. B. Willmann. **186**, 1400 (1969)
Mills, D. L.
Effect of Surface Pinning Fields on the Properties of the Heisenberg Ferromagnet—Léonard Dobrzynski and D. L. Mills. **186**, 538 (1969)
Mirman, R.
Coherent Superposition of Charge States—R. Mirman. **186**, 1380 (1969)
Misner, Charles W.
Quantum Cosmology. I.—Charles W. Misner. **186**, 1319 (1969)
Absolute Zero of Time—Charles W. Misner. **186**, 1328 (1969)
Mitra, S. S.
Pressure-Induced Phonon Frequency Shifts Measured by Raman Scattering—S. S. Mitra, O. Brafman, W. B. Daniels, and R. K. Crawford. **186**, 942 (1969)

Mjolsness, R. C.
Evaluation of Electron-Atom Bremsstrahlung from Elastic Scattering—R. C. Mjolsness and Hans M. Ruppel. **186**, 83 (1969)
Moffat, J. W.
Pion Lifetime, $\rho\pi$ and $\sigma\pi$ Intermediate States, and Sum Rules—R. A. Coleman and J. W. Moffat. **186**, 1635 (1969)
Morgan, I. L.
(n,n') and $(n,2n)$ Reactions in Several Elements at 14.8 MeV—Suresh C. Mathur, P. S. Buchanan, and I. L. Morgan. **186**, 1038 (1969)
Morosin, Bruno
Specific Heat of Three Magnetic Linear-Chain Antiferromagnets—Douglas H. Lowndes, Jr., Leonard Finegold, R. N. Rogers, and Bruno Morosin. **186**, 515 (1969)
Morrison, R. C.
$O^{16}(\gamma,p)N^{15}$ Angular Distributions over the Energy Range 21—33 MeV—D. E. Frederick, R. J. J. Stewart, and R. C. Morrison. **186**, 992 (1969)
Moss, J. M.
Spin Flip in the Inelastic Scattering of 19.6-MeV Protons from ^{54}Fe and ^{56}Fe—D. L. Hendrie, C. Glashausser, J. M. Moss, and J. Thirion. **186**, 1188 (1969)
Mueller, F. M.
Fourier-Series Representation of the Pt Fermi Surface—J. B. Ketterson, F. M. Mueller, and L. R. Windmiller. **186**, 656 (1969)
Müller, K. A.
Observation of Two Charged States of a Nickel-Oxygen Vacancy Pair in $SrTiO_3$ by Paramagnetic Resonance—K. A. Müller, W. Berlinger, and R. S. Rubins. **186**, 361 (1969)
Murray, T. E.
Electron Scattering at a Rough Surface—J. F. Koch and T. E. Murray. **186**, 722 (1969)
Nagle, J. F.
Exact Configurational Entropy of Copper Formate Tetrahydrate Model—J. F. Nagle. **186**, 594 (1969)
Nagy, Douglas
Calculation of Band-Structure Effects in Field-Emission Tunneling from Tungsten—Douglas Nagy and P. H. Cutler. a **186**, 651 (1969)
Nam, Sang Boo
Lorenz Number for Metals with Magnetic Impurities—Sang Boo Nam and Martin S. Fullenbaum. **186**, 506 (1969)
Narasimhamurty, T. S.
Photoelastic Behavior of Rochelle Salt—T. S. Narasimhamurty. **186**, 945 (1969)
Narayanaswamy, P.
Superconvergent Dispersion Relations and Pion-Pion Scattering Sum Rules—R. Acharya, H. H. Aly, and P. Narayanaswamy. **186**, 1567 (1969)
Inconsistency of Asymptotic $SU(2)\times SU(2)$ for the Proper Amplitudes with Local Chiral Algebra—R. Acharya, H. H. Aly, and P. Narayanaswamy. **186**, 1731 (1969)
Nathan, Marshall I.
Bulk Current Instabilities in Uniaxially Strained Germanium—John E. Smith, Jr., James C. McGroddy, and Marshall I. Nathan. **186**, 727 (1969)
Nathans, R.
Magnetic Neutron Scattering in Dysprosium Aluminum Garnet. I. Long-Range Order—J. C. Norvell, W. P. Wolf, L. M. Corliss, J. M. Hastings, and R. Nathans. **186**, 557 (1969)
Magnetic Neutron Scattering in Dysprosium Aluminum Garnet. II. Short-Range Order and Critical Scattering—J. C. Norvell, W. P. Wolf, L. M. Corliss, J. M. Hastings, and R. Nathans. **186**, 567 (1969)
Neighbor, J. E.
Empirical Correlation between Impurity-Dependent and Size-Dependent Deviations from Matthiessen's Rule in Indium—J. E. Neighbor and R. S. Newbower. **186**, 649 (1969)
Nelson, Kyler F.
Alkali-Halide Mixed Crystals—B. G. Dick and Kyler F. Nelson. **186**, 953 (1969)
Newbower, R. S.
Empirical Correlation between Impurity-Dependent and Size-Dependent Deviations from Matthiessen's Rule in Indium—J. E. Neighbor and R. S. Newbower. **186**, 649 (1969)
Ngwe, Tin
Microscopic Inhomogeneous Broadening and Nuclear Spin-Spin Interactions—D. Hone, V. Jaccarino, Tin Ngwe, and P. Pincus. **186**, 291 (1969)
Nicholas, M. L.
Spin Correlations in $\bar{p}p\rightarrow\bar{\Lambda}\Lambda$ at 2.19 GeV/c—N. Kwak, G. H. Mall, J. E. Manweiler, M. L. Nicholas, M. S. Redeker, T. A. Stringer, and R. Stump. **186**, 1392 (1969)
Nicholls, I. R.
Wave Functions for Nuclear-Structure Calculations—S. T. Butler, R. G. L. Hewitt, B. H. J. McKellar, I. R. Nicholls, and J. S. Truelove. **186**, 963 (1969)
Nickle, H. H.
Erratum: Approximate Solution of the Nonrelativistic Lee Model in All Sectors [**178**, 2382 (1969)]—H. H. Nickle. **186**, 1738 (1969)
Nilsen, Trygve S.
Quantum Corrections to the Square-Well Classical Second Virial Coefficient—Trygve S. Nilsen. **186**, 262 (1969)
Nissimov, H.
Approach to the Nuclear Many-Body Problem by a Variationally Determined Transformation—A. Mann, H. Nissimov, and I. Unna. **186**, 1104 (1969)
Noerdlinger, Peter D.
Geodesics of Robertson-Walker Universes—Peter D. Noerdlinger. **186**, 1347 (1969)
Nordland, W. A.
Structural Phase Transitions in $PrAlO_3$—E. Cohen, L. A. Risberg, W. A. Nordland, R. D. Burbank, R. C. Sherwood, and L. G. Van Uitert. **186**, 476 (1969)
Nordtvedt, K., Jr.
Back Reflection of Scalar and Vector Waves in Gravitational Fields—K. Nordtvedt, Jr.. **186**, 1352 (1969)
Norvell, J. C.
Magnetic Neutron Scattering in Dysprosium Aluminum Garnet. I. Long-Range Order—J. C. Norvell, W. P. Wolf, L. M. Corliss, J. M. Hastings, and R. Nathans. **186**, 557 (1969)
Magnetic Neutron Scattering in Dysprosium Aluminum Garnet. II. Short-Range Order and Critical Scattering—J. C. Norvell, W. P. Wolf, L. M. Corliss, J. M. Hastings, and R. Nathans. **186**, 567 (1969)
Oldham, William J. B., Jr.
Generalized Oscillator Strengths for Helium in the Ionized Continuum—William J. B. Oldham, Jr.. **186**, 52 (1969)
Omar, M. A.
Intervalley Transfer, Plasma Frequency, and Plasmon-LO-Phonon Interaction in n-Type Gallium Antimonide—M. A. Omar. **186**, 791 (1969)
Onton, A.
Optical Absorption Due to Excitation of Electrons Bound to Si and S in GaP—A. Onton. **186**, 786 (1969)
Oppenheimer, F.
Unique Set of $I=0$ S-Wave $\pi\pi$ Phase Shifts—J. H. Scharenguivel, L. J. Gutay, D. H. Miller, L. D. Jacobs, R. Keyser, D. Huwe, E. Marquit, F. Oppenheimer, W. Schultz, S. Marateck, J. D. Prentice, and E. West. **186**, 1387 (1969)
Pajanne, Erkki
Positron Effective Mass in an Electron Gas—Birger Bergersen and Erkki Pajanne. **186**, 375 (1969)
Pant, M. M.
Green's-Function Method for Energy Bands in Disordered Alloys—Application to Alpha Brass—M. M. Pant and S. K. Joshi. **186**, 675 (1969)

Park, S. C.
Some Features of the Single Separable Potential with Attraction and Repulsion—C. C. H. Leung and S. C. Park. **186**, 1297 (1969)
Parker, P. D.
A Study of $T=3/2$ States in N^{13}—M. J. LeVine and P. D. Parker. **186**, 1021 (1969)
Patrick, Lyle
Optical Absorption in *n*-Type Cubic SiC—Lyle Patrick and W. J. Choyke. **186**, 775 (1969)
Peak, L. S.
Lightly Ionizing Particles in Air-Shower Cores—I. Cairns, C. B. A. McCusker, L. S. Peak, and R. L. S. Woolcott. **186**, 1394 (1969)
Pershan, P. S.
Ultraviolet Magneto-Optical Properties of Single-Crystal Orthoferrites, Garnets, and Other Ferric Oxide Compounds—Frederic J. Kahn, P. S. Pershan, and J. P. Remeika. **186**, 891 (1969)
Pešić, S. S.
Transport Properties of Negative Ions in Their Parent Gases—S. S. Pešić, R. K. Janev, and D. M. Davidović. **186**, 95 (1969)
Peterson, N. L.
Isotope Effect for Cation Self-Diffusion in CoO Crystals—W. K. Chen, N. L. Peterson, and W. T. Reeves. **186**, 887 (1969)
Peterson, R. J.
Elastic and Inelastic Electron Scattering from Mn^{55}—H. Theissen, R. J. Peterson, W. J. Alston, III, and J. R. Stewart. **186**, 1119 (1969)
Phillips, W. R.
Coulomb Excitation and Reorientation of the Octupole State in ^{208}Pb—A. R. Barnett and W. R. Phillips. **186**, 1205 (1969)
Picraux, S. T.
Measurements and Calculations of Critical Angles for Planar Channeling—S. T. Picraux and J. U. Andersen. **186**, 267 (1969)
Pidgeon, C. R.
Inversion-Asymmetry and Warping-Induced Interband Magneto-Optical Transitions in InSb—C. R. Pidgeon and S. H. Groves. **186**, 824 (1969)
Pincus, P.
Microscopic Inhomogeneous Broadening and Nuclear Spin-Spin Interactions—D. Hone, V. Jaccarino, Tin Ngwe, and P. Pincus. **186**, 291 (1969)
Pittel, S.
$J=0^+$ States in Ca^{40} and Ca^{42}—P. Federman and S. Pittel. **186**, 1106 (1969)
Polkinghorne, J. C.
Renormalization of Regge Trajectories and Singularity Structure in Kikkawa-Sakita-Virasoro–Type Theories—J. C. Polkinghorne. **186**, 1670 (1969)
Polsky, L. M.
Nuclear Structure of F^{18}—L. M. Polsky, C. H. Holbrow, and R. Middleton. **186**, 966 (1969)
Prentice, J. D.
Unique Set of $I=0$ *S*-Wave $\pi\pi$ Phase Shifts—J. H. Scharenguivel, L. J. Gutay, D. H. Miller, L. D. Jacobs, R. Keyser, D. Huwe, E. Marquit, F. Oppenheimer, W. Schultz, S. Marateck, J. D. Prentice, and E. West. **186**, 1387 (1969)
Preziosi, B.
Band Structure and Impurity States—F. Bassani, G. Iadonisi, and B. Preziosi. **186**, 735 (1969)
Pronko, J. G.
Gamma-Ray Angular Correlations and Lifetime Measurements for Some Excited States of Ne^{21}—J. G. Pronko, C. Rolfs, and H. J. Maier. **186**, 1174 (1969)
Pryor, R. J.
Reorientation-Effect Measurements on Cd^{114}—J. X. Saladin, J. E. Glenn, and R. J. Pryor. **186**, 1241 (1969)
Pu, R. T.
Erratum: Many-Body Approach to Hyperfine Structure in the ^2P State of Lithium [**178**, 103 (1969)]—J. D. Lyons, R. T. Pu, and T. P. Das. **186**, 266 (1969)
Puckett, L. J.
Positive Ions in Nitric Oxide Afterglows—W. C. Lineberger and L. J. Puckett. **186**, 116 (1969)
Quitmann, D.
Hyperfine Interactions in Europium Iron Garnet—M. Stachel, S. Hüfner, G. Crecelius, and D. Quitmann. **186**, 355 (1969)
Rai, Gulshan
Origin of Ultrasonic Absorption in Heavy Water—S. K. Kor, Gulshan Rai, and O. N. Awasthi. **186**, 105 (1969)
Redeker, M. S.
Spin Correlations in $\bar{p}p \to \bar{\Lambda}\Lambda$ at 2.19 GeV/c—N. Kwak, G. H. Mall, J. E. Manweiler, M. L. Nicholas, M. S. Redeker, T. A. Stringer, and R. Stump. **186**, 1392 (1969)
Reeves, W. T.
Isotope Effect for Cation Self-Diffusion in CoO Crystals—W. K. Chen, N. L. Peterson, and W. T. Reeves. **186**, 887 (1969)
Remeika, J. P.
Ultraviolet Magneto-Optical Properties of Single-Crystal Orthoferrites, Garnets, and Other Ferric Oxide Compounds—Frederic J. Kahn, P. S. Pershan, and J. P. Remeika. **186**, 891 (1969)
Rice, D. K.
Spectral Broadening of Europium Ions in Glass—D. K. Rice and L. G. DeShazer. **186**, 387 (1969)
Richards, D. B.
High-Field Magnetization of Thulium Single Crystals—D. B. Richards and S. Legvold. **186**, 508 (1969)
Risberg, L. A.
Structural Phase Transitions in $PrAlO_3$—E. Cohen, L. A. Risberg, W. A. Nordland, R. D. Burbank, R. C. Sherwood, and L. G. Van Uitert. **186**, 476 (1969)
Robinson, David C.
Comments on Einstein Scalar Solutions—Allen I. Janis, David C. Robinson, and Jeffrey Winicour. **186**, 1729 (1969)
Robson, D.
Various Nuclear-Potential Descriptions of the Elastic Scattering of $^{16}O+^{40}Ca$—J. S. Eck, R. A. LaSalle, and D. Robson. **186**, 1132 (1969)
Rogers, F. J.
Thermodynamic Properties of Nonideal Gases. I. Free-Energy Minimization Method—H. C. Graboske, Jr., D. J. Harwood, and F. J. Rogers. **186**, 210 (1969)
Rogers, R. N.
Specific Heat of Three Magnetic Linear-Chain Antiferromagnets —Douglas H. Lowndes, Jr., Leonard Finegold, R. N. Rogers, and Bruno Morosin. **186**, 515 (1969)
Rolfs, C.
Gamma-Ray Angular Correlations and Lifetime Measurements for Some Excited States of Ne^{21}—J. G. Pronko, C. Rolfs, and H. J. Maier. **186**, 1174 (1969)
Romer, R. H.
Normal-Fluid Densities in Liquid Helium II under Pressure—R. H. Romer and R. J. Duffy. **186**, 255 (1969)
Rosenbaum, Ralph L.
Thermal Conductivity of Alkali Halide Crystals Containing the Hydroxide Ion—Ralph L. Rosenbaum, Cheuk-Kin Chau, and Miles V. Klein. **186**, 852 (1969)
Rosenberg, E.
Measurement of the Ratio of the τ' Partial Decay Rates: $\Gamma(K^- \to \pi^-\pi^0\pi^0)/\Gamma(K^+ \to \pi^+\pi^0\pi^0)$—D. Herzo, D. Banner, E. Beier, W. K. Bertram, R. T. Edwards, H. Frauenfelder, L. J. Koester, E. Rosenberg, A. Russell, S. Segler, and A. Wattenberg. **186**, 1403 (1969)
Roth, Laura M.
Electron Correlation in Narrow Energy Bands. II. One Reversed Spin in an Otherwise Fully Aligned Narrow *S* Band—Laura M. Roth. **186**, 428 (1969)
Rubins, R. S.
Observation of Two Charged States of a Nickel-Oxygen Vacancy Pair in $SrTiO_3$ by Paramagnetic Resonance—K. A. Müller, W. Berlinger, and R. S. Rubins. **186**, 361 (1969)

Ruby, S. L.
Change in Nuclear Radius upon Excitation for ^{119}Sn, ^{121}Sb, ^{125}Te, ^{127,129}I, and ^{129}Xe from Mössbauer Isomer Shifts—S. L. Ruby and G. K. Shenoy. **186**, 326 (1969)

Ruppel, Hans M.
Evaluation of Electron-Atom Bremsstrahlung from Elastic Scattering—R. C. Mjolsness and Hans M. Ruppel. **186**, 83 (1969)

Russell, A.
Measurement of the Ratio of the τ' Partial Decay Rates: $\Gamma(K^-\to\pi^-\pi^0\pi^0)/\Gamma(K^+\to\pi^+\pi^0\pi^0)$—D. Herzo, D. Banner, E. Beier, W. K. Bertram, R. T. Edwards, H. Frauenfelder, L. J. Koester, E. Rosenberg, A. Russell, S. Segler, and A. Wattenberg. **186**, 1403 (1969)

Sakurai, J. J.
Vector-Meson-Dominance Predictions on Inelastic Electron-Proton Scattering—C. F. Cho, G. J. Gounaris, and J. J. Sakurai. **186**, 1734 (1969)

Saladin, J. X.
Reorientation-Effect Measurements on Cd^{114}—J. X. Saladin, J. E. Glenn, and R. J. Pryor. **186**, 1241 (1969)

Salam, Abdus
Reggeization in Supermultiplet Theories—R. Delbourgo and Abdus Salam. **186**, 1516 (1969)

Samara, G. A.
Effect of Pressure on the Néel Temperature of Magnetite—G. A. Samara and A. A. Giardini. **186**, 577 (1969)

Scharenguivel, J. H.
Unique Set of $I=0$ S-Wave $\pi\pi$ Phase Shifts—J. H. Scharenguivel, L. J. Gutay, D. H. Miller, L. D. Jacobs, R. Keyser, D. Huwe, E. Marquit, F. Oppenheimer, W. Schultz, S. Marateck, J. D. Prentice, and E. West. **186**, 1387 (1969)

Schiff, Daniel
Computer "Experiments" on Liquid Metals—Daniel Schiff. **186**, 151 (1969)

Schiller, Ralph
Mass Spectra and Classical Dynamics—Ralph Schiller and Lee Jacobi. **186**, 1360 (1969)

Schmid, Albert
Relaxation and Electromagnetic Response of a Superconductor in a State of Supercurrent Flow—Albert Schmid. **186**, 420 (1969)

Schneider, B.
Addendum to "Pseudopotential Method for Inelastic Processes in Atoms and Molecules. II. Photoionization of N_2"—B. Schneider and R. S. Berry. **186**, 265 (1969)

Schultz, W.
Unique Set of $I=0$ S-Wave $\pi\pi$ Phase Shifts—J. H. Scharenguivel, L. J. Gutay, D. H. Miller, L. D. Jacobs, R. Keyser, D. Huwe, E. Marquit, F. Oppenheimer, W. Schultz, S. Marateck, J. D. Prentice, and E. West. **186**, 1387 (1969)

Schweizer, J.
Polarized-Neutron-Diffraction Study of Magnetic Moments in Yttrium-Cobalt Alloys—E. Krén, J. Schweizer, and F. Tasset. **186**, 479 (1969)

Scully, Marian O.
Evaporation from Superfluid Helium—David S. Hyman, Marian O. Scully, and Allan Widom. **186**, 231 (1969)

Segler, S.
Measurement of the Ratio of the τ' Partial Decay Rates: $\Gamma(K^-\to\pi^-\pi^0\pi^0)/\Gamma(K^+\to\pi^+\pi^0\pi^0)$—D. Herzo, D. Banner, E. Beier, W. K. Bertram, R. T. Edwards, H. Frauenfelder, L. J. Koester, E. Rosenberg, A. Russell, S. Segler, and A. Wattenberg. **186**, 1403 (1969)

Segrè, G.
Model for Higher-Order Weak Interactions—L. F. Li and G. Segrè. **186**, 1477 (1969)

Seiler, D. G.
Effect of Hydrostatic Pressure on the Band Structure of GaSb—D. G. Seiler and W. M. Becker. **186**, 784 (1969)

Semura, J. S.
Energy Transport in Magnetic Chains—D. L. Huber, J. S. Semura, and C. G. Windsor. **186**, 534 (1969)

Shapero, Don
Regge Poles in Scalar-Vector Field Theory—Don Shapero. **186**, 1697 (1969)

Shardanand
Absorption Cross Sections of O_2 and O_4 Between 2000 and 2800 Å Shardanand. **186**, 5 (1969)

Shenoy, G. K.
Change in Nuclear Radius upon Excitation for ^{119}Sn, ^{121}Sb, ^{125}Te, ^{127,129}I, and ^{129}Xe from Mössbauer Isomer Shifts—S. L. Ruby and G. K. Shenoy. **186**, 326 (1969)

Sherwood, R. C.
Structural Phase Transitions in $PrAlO_3$—E. Cohen, L. A. Risberg, W. A. Nordland, R. D. Burbank, R. C. Sherwood, and L. G. Van Uitert. **186**, 476 (1969)

Shih, Chia-Chang
Regularization and Ward-Identity Anomalies—R. W. Brown, Chia-Chang Shih, and Bing-Lin Young. **186**, 1491 (1969)

Shivpuri, R. K.
Deuteron Production in Interactions of 22.8-GeV/c Protons with Ag and Br Nuclei—R. K. Shivpuri and B. Bhowmik. **186**, 1200 (1969)

Sibley, W. A.
Luminescence of the F^+ Center in MgO—Y. Chen, J. L. Kolopus, and W. A. Sibley. **186**, 865 (1969)
Optical Absorption and Luminescence of Irradiated MgF_2—O. E. Facey and W. A. Sibley. **186**, 926 (1969)

Sigel, James L.
Derivation of a Quasiparticle Transport Equation for an Impure Fermi Liquid at Low Temperatures—James L. Sigel. **186**, 182 (1969)

Silver, A.
Scattering of Electrons from H_2^+. II.—A. Temkin, K. V. Vasavada, Edward S. Chang, and A. Silver. **186**, 57 (1969)

Simmons, Walter A.
Meson Mass Spectrum and the Algebraic Aspects of Chiral Symmetry—Walter A. Simmons. **186**, 1529 (1969)

Simonsen, H.
Stopping Power of Zr, Gd, and Ta for 5–12-MeV Protons and Deuterons. Further Evidence of an Oscillatory Behavior of the Excitation Potential—H. H. Andersen, H. Simonsen, H. Sørensen, and P. Vajda. **186**, 372 (1969)

Singwi, K. S.
Spin Correlations in tha Electron Liquid—R. Lobo, K. S. Singwi, and M. P. Tosi. **186**, 470 (1969)

Smith, John E., Jr.
Bulk Current Instabilities in Uniaxially Strained Germanium—John E. Smith, Jr., James C. McGroddy, and Marshall I. Nathan. **186**, 727 (1969)

Snyder, F. D.
Study of $Be^9(Li^7,p)$, $Be^9(Li^7,d)$, $Be^9(Li^7,t)$, and $Be^9(Li^7,\alpha)$ Reactions from 5.6 to 6.2 MeV—F. D. Snyder and M. A. Waggoner. **186**, 999 (1969)

Solimeno, Salvatore
Quantum Theory of a Randomly Modulated Harmonic Oscillator—Bruno Crosignani, Paolo Di Porto, and Salvatore Solimeno. **186**, 1342 (1969)

Sorensen, H.
Stopping Power of Zr, Gd, and Ta for 5–12-MeV Protons and Deuterons. Further Evidence of an Oscillatory Behavior of the Excitation Potential—H. H. Andersen, H. Simonsen, H. Sørensen, and P. Vajda. **186**, 372 (1969)

Sorokin, P. P.
Infrared Laser Action in Sr Vapor Resulting from Optical Pumping and Inelastic Collisions—P. P. Sorokin and J. R. Lankard. **186**, 342 (1969)

Spejewski, E. H.
Level Structure of $Te^{116,118,120,122}$—E. H. Spejewski, P. K. Hopke, and F. W. Loeser, Jr.. **186**, 1270 (1969)

Stachel, M.
Hyperfine Interactions in Europium Iron Garnet—M. Stachel, S. Hüfner, G. Crecelius, and D. Quitmann. **186**, 355 (1969)
Stagat, R.
Unitary Pole Approximation and Binding Energy of the Trinucleon—T. Brady, M. Fuda, E. Harms, J. S. Levinger, and R. Stagat. **186**, 1069 (1969)
Stein, T. S.
Permanent Electric Dipole Moment of the Cesium Atom. An Upper Limit to the Electric Dipole Moment of the Electron—T. S. Stein, J. P. Carrico, E. Lipworth, and M. C. Weisskopf. **186**, 39 (1969)
Steinberg, R. I.
Measurement of Polarization Effects in the $H^2(d,p)H^3$ Reaction at 140 keV—R. I. Steinberg, C. W. Drake, and D. C. Bonar. **186**, 1059 (1969)
Stell, G.
Critical Correlations of Certain Lattice Systems with Long-Range Forces—G. Stell and W. K. Theumann. **186**, 581 (1969)
Stephas, Paul
Internal Ionization During Electron Capture—Paul Stephas. **186**, 1013 (1969)
Stephen, Michael J.
Noise in a Driven Josephson Oscillator—Michael J. Stephen. **186**, 393 (1969)
Stewart, J. R.
Elastic and Inelastic Electron Scattering from Mn^{55}—H. Theissen, R. J. Peterson, W. J. Alston, III, and J. R. Stewart. **186**, 1119 (1969)
Stewart, R. J. J.
$O^{16}(\gamma,p)N^{15}$ Angular Distributions over the Energy Range 21—33 MeV—D. E. Frederick, R. J. J. Stewart, and R. C. Morrison. **186**, 992 (1969)
Stoddart, J. C.
Electronic Structure of Point Defects and Impurities in Metals—J. C. Stoddart, N. H. March, and M. J. Stott. **186**, 683 (1969)
Stott, M. J.
Electronic Structure of Point Defects and Impurities in Metals—J. C. Stoddart, N. H. March, and M. J. Stott. **186**, 683 (1969)
Streever, R. L.
Nuclear-Magnetic-Resonance Studies of Fe^{57} in Barium Ferrite—R. L. Streever. **186**, 285 (1969)
Stringer, T. A.
Spin Correlations in $\bar{p}p \rightarrow \bar{\Lambda}\Lambda$ at 2.19 GeV/c—N. Kwak, G. H. Mall, J. E. Manweiler, M. L. Nicholas, M. S. Redeker, T. A. Stringer, and R. Stump. **186**, 1392 (1969)
Stuart, R. N.
Fowler's Hypothesis and the Determination of Photoemission Thresholds—F. Wooten and R. N. Stuart. **186**, 592 (1969)
Stukel, D. J.
Electronic Band Structure and Related Properties of Cubic AlP—D. J. Stukel and R. N. Euwema. **186**, 754 (1969)
Stump, R.
Spin Correlations in $\bar{p}p \rightarrow \bar{\Lambda}\Lambda$ at 2.19 GeV/c—N. Kwak, G. H. Mall, J. E. Manweiler, M. L. Nicholas, M. S. Redeker, T. A. Stringer, and R. Stump. **186**, 1392 (1969)
Sucher, Joseph
Eikonal Approximation in Quantum Field Theory—Maurice Lévy and Joseph Sucher. **186**, 1656 (1969)
Sunyar, A. W.
Anomalous γ-Band Intraband Transition Rates in Er^{166}—A. W. Sunyar. **186**, 1227 (1969)
Swift, Arthur R.
Secondary Trajectories and the Saturation of Finite-Energy Sum Rule—Arthur R. Swift and Robin W. Tucker. **186**, 1553 (1969)
Tadić, D.
Schwinger Terms, Field Algebra, the Parity-Violating Internucleon Potential, and Models of the Weak Hamiltonian—E. Fischbach, D. Tadić, and K. Trabert. **186**, 1688 (1969)
Tasset, F.
Polarized-Neutron-Diffraction Study of Magnetic Moments in Yttrium-Cobalt Alloys—E. Krén, J. Schweizer, and F. Tasset. **186**, 479 (1969)
Temkin, A.
Scattering of Electrons from H_2^+. II.—A. Temkin, K. V. Vasavada, Edward S. Chang, and A. Silver. **186**, 57 (1969)
Theissen, H.
Elastic and Inelastic Electron Scattering from Mn^{55}—H. Theissen, R. J. Peterson, W. J. Alston, III, and J. R. Stewart. **186**, 1119 (1969)
Theumann, W. K.
Critical Correlations of Certain Lattice Systems with Long-Range Forces—G. Stell and W. K. Theumann. **186**, 581 (1969)
Thiebaux, M. L.
Interpolation of a Scattering Amplitude between Integral Values of an External Spin—M. L. Thiebaux. **186**, 1560 (1969)
Thirion, J.
Spin Flip in the Inelastic Scattering of 19.6-MeV Protons from ^{54}Fe and ^{56}Fe—D. L. Hendrie, C. Glashausser, J. M. Moss, and J. Thirion. **186**, 1188 (1969)
Tindle, Graham L.
Partial-Wave Decompositions of the Relativistic Scattering Amplitude—Graham L. Tindle. **186**, 1484 (1969)
Toepffer, Christian
Higher-Order Effects in Electron-Nucleus Scattering—Christian Toepffer and Walter Greiner. **186**, 1044 (1969)
Tomozawa, Yukio
Quark Model and the Pomeranchuk Theorem—Yukio Tomozawa. **186**, 1504 (1969)
Tosi, M. P.
Spin Correlations in the Electron Liquid—R. Lobo, K. S. Singwi, and M. P. Tosi. **186**, 470 (1969)
Trabert, K.
Schwinger Terms, Field Algebra, the Parity-Violating Internucleon Potential, and Models of the Weak Hamiltonian—E. Fischbach, D. Tadić, and K. Trabert. **186**, 1688 (1969)
Trammell, G. T.
Mössbauer Diffraction. II. Dynamical Theory of Mössbauer Optics—J. P. Hannon and G. T. Trammell. **186**, 306 (1969)
Truelove, J. S.
Wave Functions for Nuclear-Structure Calculations—S. T. Butler, R. G. L. Hewitt, B. H. J. McKellar, I. R. Nicholls, and J. S. Truelove. **186**, 963 (1969)
Tsui, D. C.
Surface-Plasmon Excitation by Tunneling Electrons in GaAs-Pb Tunnel Junctions—D. C. Tsui and A. S. Barker, Jr.. **186**, 590 (1969)
Tucker, Robin W.
Secondary Trajectories and the Saturation of Finite-Energy Sum Rule—Arthur R. Swift and Robin W. Tucker. **186**, 1553 (1969)
Study of an S-Matrix Model for the Three-Body Decay of a Spinning Resonance—R. W. Tucker. **186**, 1598 (1969)
Tze, Hsiung Chia
Broken-Symmetry Couplings for $S_8 \rightarrow P_8P_8$—Hsiung Chia Tze. **186**, 1470 (1969)
Unna, I.
Approach to the Nuclear Many-Body Problem by a Variationally Determined Transformation—A. Mann, H. Nissimov, and I. Unna. **186**, 1104 (1969)
Vaidya, P. C.
Gravitational Field of a Sphere Composed of Concentric Shells—A. L. Mehra, P. C. Vaidya, and R. S. Kushwaha. **186**, 1333 (1969)
Vajda, P.
Stopping Power of Zr, Gd, and Ta for 5–12-MeV Protons and Deuterons. Further Evidence of an Oscillatory Behavior of the Excitation Potential—H. H. Andersen, H. Simonsen, H. Sørensen, and P. Vajda. **186**, 372 (1969)

Effect of Polarized Light on the 1.8-, 3.3-, and 3.9-μ Radiation-Induced Absorption Bands in Silicon—L. J. Cheng and P. Vajda. **186**, 816 (1969)

van der Ziel, J. P.

Optical Emission Spectrum of Cr^{3+}-Eu^{3+} Pairs in Europium a Gallium Garnet—J. P. van der Ziel and L. G. Van Uitert. **186**, 332 (1969)

Van Uitert, L. G.

Optical Emission Spectrum of Cr^{3+}-Eu^{3+} Pairs in Europium Gallium Garnet—J. P. van der Ziel and L. G. Van Uitert. **186**, 332 (1969)

Structural Phase Transitions in $PrAlO_3$—E. Cohen, L. A. Risberg, W. A. Nordland, R. D. Burbank, R. C. Sherwood, and L. G. Van Uitert. **186**, 476 (1969)

Vasavada, K. V.

Scattering of Electrons from H_2^+. II.—A. Temkin, K. V. Vasavada, Edward S. Chang, and A. Silver. **186**, 57 (1969)

Velo, Giorgio

Propagation and Quantization of Rarita-Schwinger Waves in an External Electromagnetic Potential—Giorgio Velo and Daniel Zwanziger. **186**, 1337 (1969)

Waggoner, M. A.

Study of $Be^9(Li^7,p)$, $Be^9(Li^7,d)$, $Be^9(Li^7,t)$, and $Be^9(Li^7,\alpha)$ Reactions from 5.6 to 6.2 MeV—F. D. Snyder and M. A. Waggoner. **186**, 999 (1969)

Waldram, J. R.

Selection Rule for Tunneling from Superconductors—J. E. Dowman, M. L. A. MacVicar, and J. R. Waldram. **186**, 452 (1969)

Walker, J. C.

Magnetic Dipole and Electric Quadrupole Moments of the First 2^+ State of Sm^{154}—R. M. Wheeler, U. Atzmony, and J. C. Walker. **186**, 1280 (1969)

Wallis, R. F.

Erratum: Theoretical Temperature Dependence of the Mean-Square Displacements and Velocities of Surface Atoms of Face-Centered Cubic Crystals [**180**, 716 (1969)]—R. F. Wallis, B. C. Clark, Robert Herman, and D. C. Gazis. **186**, 962 (1969)

Watson, R. E.

Role of Interband Mixing in Exchange Coupling and Conduction-Electron Polarization in Metals—R. E. Watson, A. J. Freeman, and S. Koide. **186**, 625 (1969)

Wattenberg, A.

Measurement of the Ratio of the τ' Partial Decay Rates: $\Gamma(K^-\to\pi^-\pi^0\pi^0)/\Gamma(K^+\to\pi^+\pi^0\pi^0)$—D. Herzo, D. Banner, E. Beier, W. K. Bertram, R. T. Edwards, H. Frauenfelder, L. J. Koester, E. Rosenberg, A. Russell, S. Segler, and A. Wattenberg. **186**, 1403 (1969)

Weiler, Margaret H.

Effects of a Magnetic Field on Optical Mixing Due to Nonparabolicity in *n*-InSb—R. W. Bierig, Margaret H. Weiler, and Benjamin Lax. **186**, 747 (1969)

Weisskopf, M. C.

Permanent Electric Dipole Moment of the Cesium Atom. An Upper Limit to the Electric Dipole Moment of the Electron—T. S. Stein, J. P. Carrico, E. Lipworth, and M. C. Weisskopf. **186**, 39 (1969)

Werner, S. A.

Neutron-Diffraction Measurement of the Lattice Parameter of Potassium Metal at 5.2°K—S. A. Werner, E. Gürman, and A. Arrott. **186**, 705 (1969)

West, E.

Unique Set of $I=0$ *S*-Wave $\pi\pi$ Phase Shifts—J. H. Scharenguivel, L. J. Gutay, D. H. Miller, L. D. Jacobs, R. Keyser, D. Huwe, E. Marquit, F. Oppenheimer, W. Schultz, S. Marateck, J. D. Prentice, and E. West. **186**, 1387 (1969)

Wetzel, K. J.

Absence of Recoil Doppler Broadening of the 3367-keV Transition Following the Reaction $^9Be(n_{th},\gamma)^{10}Be$—K. J. Wetzel. **186**, 1292 (1969)

Whang, Y. C.

Field and Plasma in the Lunar Wake—Y. C. Whang. **186**, 143 (1969)

Wheeler, R. M.

Magnetic Dipole and Electric Quadrupole Moments of the First 2^+ State of Sm^{154}—R. M. Wheeler, U. Atzmony, and J. C. Walker. **186**, 1280 (1969)

Widom, Allan

Evaporation from Superfluid Helium—David S. Hyman, Marian O. Scully, and Allan Widom. **186**, 231 (1969)

Willard, H. B.

Elastic and Inelastic Scattering of Protons from Krypton—H. J. Kim, J. K. Bair, C. M. Jones, and H. B. Willard. **186**, 1110 (1969)

Williams, Ferd

Theory of Donor-Acceptor Dipairs in Semiconductors—M. Martens, L. Mehrkam, and Ferd Williams. **186**, 757 (1969)

Willmann, R. B.

Reaction $\pi^+n\to K^+K^-p$ at 2.7 GeV/c—A. F. Garfinkel, S. Lichtman, R. J. Miller, and R. B. Willmann. **186**, 1400 (1969)

Windmiller, L. R.

Fourier-Series Representation of the Pt Fermi Surface—J. B. Ketterson, F. M. Mueller, and L. R. Windmiller. **186**, 656 (1969)

Windsor, C. G.

Energy Transport in Magnetic Chains—D. L. Huber, J. S. Semura, and C. G. Windsor. **186**, 534 (1969)

Winicour, Jeffrey

Comments on Einstein Scalar Solutions—Allen I. Janis, David C. Robinson, and Jeffrey Winicour. **186**, 1729 (1969)

Winter, E. M.

Dichroism of *V* Bands in Potassium and Rubidium Halides—E. M. Winter, D. R. Wolfe, and R. W. Christy. **186**, 949 (1969)

Wolf, W. P.

Magnetic Neutron Scattering in Dysprosium Aluminum Garnet. I. Long-Range Order—J. C. Norvell, W. P. Wolf, L. M. Corliss, J. M. Hastings, and R. Nathans. **186**, 557 (1969)

Magnetic Neutron Scattering in Dysprosium Aluminum Garnet. II. Short-Range Order and Critical Scattering—J. C. Norvell, W. P. Wolf, L. M. Corliss, J. M. Hastings, and R. Nathans. **186**, 567 (1969)

Wolfe, D. R.

Dichroism of *V* Bands in Potassium and Rubidium Halides—E. M. Winter, D. R. Wolfe, and R. W. Christy. **186**, 949 (1969)

Woolcott, R. L. S.

Lightly Ionizing Particles in Air-Shower Cores—I. Cairns, C. B. A. McCusker, L. S. Peak, and R. L. S. Woolcott. **186**, 1394 (1969)

Wooten, F.

Fowler's Hypothesis and the Determination of Photoemission Thresholds—F. Wooten and R. N. Stuart. **186**, 592 (1969)

Wozniak, M. J., Jr.

Mean Lives, Branching Ratios, and Excitation Energies of Levels in ^{20}F below 4 MeV—R. L. Hershberger, M. J. Wozniak, Jr., and D. J. Donahue. **186**, 1167 (1969)

Wu, Tai Tsun

Impact Factor and Exponentiation in High-Energy Scattering Processes—Hung Cheng and Tai Tsun Wu. **186**, 1611 (1969)

Wulff, J.

Nuclear Zeeman Effect in W^{182} in Iron—R. B. Frankel, Y. Chow, L. Grodzins, and J. Wulff. **186**, 381 (1969)

Yee, Jick H.

Calculation of Two-Phonon Conductivity in Semiconductors—Jick H. Yee. **186**, 778 (1969)

Yesian, H. J.

Experimental Implications of the Bardakci-Ruegg Representations for Resonance Production—John F. Gunion and H. J. Yesian. **186**, 1415 (1969)

Yntema, J. L.
(d,t) and (d,He^3) Reactions on the Calcium Isotopes—J. L. Yntema. **186**, 1144 (1969)
Young, Bing-Lin
Regularization and Ward-Identity Anomalies—R. W. Brown, Chia-Chang Shih, and Bing-Lin Young. **186**, 1491 (1969)
Zare, R. N.
Measurement of the Hanle Effect for the OH Radical—K. R. German and R. N. Zare. **186**, 9 (1969)
Zisman, M. S.
High-Spin States of Configuration $(1d_{552})_{5+,0}{}^2$ and $(1g_{922})_{9+,0}{}^2$ Strongly Populated by tha (α,d) Reaction—C. C. Lu, M. S. Zisman, and B. G. Harvey. **186**, 1086 (1969)
Zwanziger, Daniel
Propagation and Quantization of Rarita-Schwinger Waves in an External Electromagnetic Potential—Giorgio Velo and Daniel Zwanziger. **186**, 1337 (1969)

AMERICAN INSTITUTE OF PHYSICS

335 East 45 Street New York, New York 10017

THE American Institute of Physics was founded in 1931 as a federation of leading societies in the field of Physics. It combines into one operating agency those functions on behalf of physics that can best be done by the Societies jointly. Its purpose is the advancement and diffusion of the knowledge of physics and its application to human welfare. To this end, it publishes for itself or the Societies the 16 journals listed on this page, as well as the 13 translations of Soviet journals; promotes unity and effectiveness of effort among all who are interested in physics; renders numerous direct services to physicists and to the public; and cooperates with government agencies, national associations, educational institutions, technical industries, and others in such manner as to realize the opportunities and fulfill the responsibilities of physics as an important and constructive human activity.

MEMBER SOCIETIES:

The American Physical Society
W. W. HAVENS, JR., *Executive Secretary*, 335 East 45 Street, New York, N. Y. 10017

Optical Society of America
MARY WARGA, *Executive Secretary*, 2100 Pennsylvania Avenue NW, Washington, D. C. 20037

Acoustical Society of America
WALLACE WATERFALL, *Secretary*, 335 East 45 Street, New York, N. Y. 10017

Society of Rheology
JOHN C. MILLER, *Secretary-Treasurer*, Union Carbide Plastics Co., Bound Brook, N. J. 08805

American Association of Physics Teachers
ALFRED ROMER, *Secretary*, St. Lawrence University, Canton, N. Y. 13617

American Crystallographic Association
WILLIAM L. KEHL, *Secretary*, Gulf Research & Development Co., P.O. Box 2038, Pittsburgh, Pa.

American Astronomical Society
G. C. MCVITTIE, *Secretary*, University of Illinois Observatory, Urbana, Ill.

AFFILIATED SOCIETIES: American Association of Physicists in Medicine · American Institute of Aeronautics and Astronautics · American Society for Metals · American Vacuum Society · Cleveland Physics Society · Division of Physical Chemistry of ACS · Electron Microscopy Society of America · Geological Society of America · Instrument Society of America · Nuclear Science Group of IEEE · Philosophical Society of Washington · Physical Society of Pittsburgh · Physics Club of Chicago · Physics Club of Lehigh Valley · Physics Club of Milwaukee · Physics Club of New York · Physics Club of Philadelphia · Physics Club of Richmond · Society for Applied Spectroscopy

CORPORATE ASSOCIATES: Over 150 leading industrial enterprises and other institutions which contribute to the support of the Institute.

JOURNALS:

The Physical Review • S. PASTERNACK; A. W. K. METZNER; J. R. ROESSER, *Editors*, Brookhaven National Laboratory, Upton, Long Island, N. Y. 11973

Reviews of Modern Physics • L. M. BRANSCOMB, *Editor*, National Bureau of Standards, Washington, D. C. 20234

Journal of the Optical Society of America • DAVID L. MAC ADAM, *Editor*, 68 Hammond Street, Rochester, N. Y. 14615

The Journal of the Acoustical Society of America • R. BRUCE LINDSAY, *Editor*, Department of Physics, Brown University, Providence, R. I. 02912

American Journal of Physics • FOREST I. BOLEY, *Editor*, Department of Physics, Dartmouth College, Hanover, N. H. 03755

The Journal of Vacuum Science and Technology • FRANKLIN M. PROPST, *Editor*, Coordinated Science Laboratory, University of Illinois, Urbana, Ill. 61803

The Review of Scientific Instruments • J. B. HORNER KUPER, *Editor*, Brookhaven National Laboratory, Upton, Long Island, N. Y. 11973

The Journal of Chemical Physics • J. W. STOUT, *Editor*, Department of Chemistry, The University of Chicago, Chicago, Ill. 60637

Journal of Applied Physics • FRANK E. MYERS, *Editor*, Argonne National Laboratory, Box 296, Argonne, Ill. 60440

Physics Today • R. HOBART ELLIS, *Editor*, American Institute of Physics, 335 East 45 Street, New York, N. Y. 10017

The Physics of Fluids • FRANÇOIS N. FRENKIEL, *Editor*, Applied Mathematics Laboratory, Naval Ship Research and Development Center, Washington, D. C. 20007

Journal of Mathematical Physics • ELLIOTT W. MONTROLL, *Editor*, Physics Department, University of Rochester, Rochester, N. Y. 14627

The Astronomical Journal • L. WOLTJER AND N. H. BAKER, *Editors*, Department of Astronomy, Columbia University, New York, N. Y. 10027

Applied Physics Letters • FRANK E. MYERS, *Editor*, Argonne National Laboratory, Box 296, Argonne, Ill. 60440

Applied Optics • JOHN N. HOWARD, *Editor*, Air Force Cambridge Research Laboratories, Bedford, Mass. 01730

Applied Spectroscopy • JOHN R. FERRARO, *Editor*, Chemistry Division, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Ill. 60440

TRANSLATION JOURNALS:

Soviet Physics—JETP
Soviet Physics—Solid State
Soviet Physics—Technical Physics
Soviet Physics—Doklady
JETP Letters
Optics and Spectroscopy
Soviet Physics—Semiconductors
Soviet Physics—Acoustics
Soviet Physics—Crystallography
Soviet Physics—Uspekhi
Soviet Astronomy—AJ
Soviet Journal of Nuclear Physics
Soviet Journal of Optical Technology

GOVERNING BOARD

Ralph A. Sawyer, *Chairman*
Luis W. Alvarez
Arnold Arons
Stanley S. Ballard
John Bardeen
Robert T. Beyer
Joseph A. Burton
H. Richard Crane
Herbert I. Fusfeld
Ronald Geballe
J. E. Goldman
S. A. Goudsmit
W. W. Havens, Jr.
Gerald Holton
W. Lewis Hyde
G. A. Jeffrey
Karl G. Kessler
H. William Koch
R. Bruce Lindsay
Robert N. Little
A. I. Mahan
G. C. McVittie
Robert G. Sachs
Frederick Seitz
Thor L. Smith
Mary E. Warga
Wallace Waterfall
A. E. Whitford
Clarence Zener

GENERAL ADMINISTRATION

H. William Koch
Director
Wallace Waterfall
Secretary
Gerald F. Gilbert
Treasurer and Controller
Lewis Slack
Associate Director, General Activities
Kathryn Setze
Assistant Treasurer
Emily Wolf
Society Services Manager
Dwight E. Gray
Washington Representative

DIRECTORS OF PROFESSIONAL DIVISIONS

Hugh C. Wolfe
Publications
A. W. K. Metzner
Assistant Director of Publications
Arthur Herschman
Information
Eugene H. Kone
Public Relations
Charles Weiner
Physics History
A. A. Strassenburg
Education and Manpower
R. H. Ellis, Jr.
Physics Today

PUBLISHING OPERATIONS

David A. Howell
Editorial Manager
Mitchell Koch
Assistant Editorial Manager
Edward P. Greeley
Advertising Manager
John Di Caro
Fulfillment Manager
Beatrice Nesbitt
Accounting Manager
Margaret R. Pavin
Supervisor, Special Publications
Jo-Ann Wasserman
Supervisor, Journal Publications
Senior Copy Editors
David Ganz
David Hathwell
Barbara Weismann
Carolyn McLaughlin

9-16-69

LANCASTER PRESS, INC., LANCASTER, PA.